ArcTan

Notations

Traditional name

Inverse tangent

Traditional notation

$\tan^{-1}(z)$

Mathematica StandardForm notation

`ArcTan[z]`

Primary definition

01.14.02.0001.01

$$\tan^{-1}(z) == \frac{i}{2} (\log(1 - i\, z) - \log(i\, z + 1))$$

The function $\tan^{-1}(z)$ can also be defined as the inverse function for $\tan(w)$: $w = \tan^{-1}(z)$ if and only if $\tan(w) = z$.

Specific values

Values at fixed points

01.14.03.0001.01

$$\tan^{-1}(0) == 0$$

01.14.03.0002.01

$$\tan^{-1}\left(2 - \sqrt{3}\right) == \frac{\pi}{12}$$

01.14.03.0003.01

$$\tan^{-1}\left(\sqrt{3} - 2\right) == -\frac{\pi}{12}$$

01.14.03.0004.01

$$\tan^{-1}\left(\sqrt{1 - \frac{2}{\sqrt{5}}}\right) == \frac{\pi}{10}$$

01.14.03.0005.01

$$\tan^{-1}\left(-\sqrt{1-\frac{2}{\sqrt{5}}}\right) == -\frac{\pi}{10}$$

01.14.03.0006.01

$$\tan^{-1}\left(\sqrt{2}-1\right) == \frac{\pi}{8}$$

01.14.03.0007.01

$$\tan^{-1}\left(1-\sqrt{2}\right) == -\frac{\pi}{8}$$

01.14.03.0008.01

$$\tan^{-1}\left(\frac{1}{\sqrt{3}}\right) == \frac{\pi}{6}$$

01.14.03.0009.01

$$\tan^{-1}\left(-\frac{1}{\sqrt{3}}\right) == -\frac{\pi}{6}$$

01.14.03.0010.01

$$\tan^{-1}\left(\sqrt{5-2\sqrt{5}}\right) == \frac{\pi}{5}$$

01.14.03.0011.01

$$\tan^{-1}\left(-\sqrt{5-2\sqrt{5}}\right) == -\frac{\pi}{5}$$

01.14.03.0012.01

$$\tan^{-1}(1) == \frac{\pi}{4}$$

01.14.03.0013.01

$$\tan^{-1}(-1) == -\frac{\pi}{4}$$

01.14.03.0014.01

$$\tan^{-1}\left(\sqrt{1+\frac{2}{\sqrt{5}}}\right) == \frac{3\pi}{10}$$

01.14.03.0015.01

$$\tan^{-1}\left(-\sqrt{1+\frac{2}{\sqrt{5}}}\right) == -\frac{3\pi}{10}$$

01.14.03.0016.01

$$\tan^{-1}\left(\sqrt{3}\right) == \frac{\pi}{3}$$

01.14.03.0017.01

$$\tan^{-1}\left(-\sqrt{3}\right) == -\frac{\pi}{3}$$

01.14.03.0018.01

$$\tan^{-1}\left(1+\sqrt{2}\right) = \frac{3\pi}{8}$$

01.14.03.0019.01

$$\tan^{-1}\left(-1-\sqrt{2}\right) = -\frac{3\pi}{8}$$

01.14.03.0020.01

$$\tan^{-1}\left(\sqrt{5+2\sqrt{5}}\right) = \frac{2\pi}{5}$$

01.14.03.0021.01

$$\tan^{-1}\left(-\sqrt{5+2\sqrt{5}}\right) = -\frac{2\pi}{5}$$

01.14.03.0022.01

$$\tan^{-1}\left(2+\sqrt{3}\right) = \frac{5\pi}{12}$$

01.14.03.0023.01

$$\tan^{-1}\left(-2-\sqrt{3}\right) = -\frac{5\pi}{12}$$

01.14.03.0024.01

$$\tan^{-1}(i) = i\,\infty$$

01.14.03.0025.01

$$\tan^{-1}(-i) = -i\,\infty$$

Values at infinities

01.14.03.0026.01

$$\tan^{-1}(\infty) = \frac{\pi}{2}$$

01.14.03.0027.01

$$\tan^{-1}(-\infty) = -\frac{\pi}{2}$$

01.14.03.0028.01

$$\tan^{-1}(i\,\infty) = \frac{\pi}{2}$$

01.14.03.0029.01

$$\tan^{-1}(-i\,\infty) = -\frac{\pi}{2}$$

01.14.03.0030.01

$$\left|\tan^{-1}(\tilde{\infty})\right| = \frac{\pi}{2}$$

General characteristics

Domain and analyticity

$\tan^{-1}(z)$ is an analytical function of z, which is defined over the whole complex z-plane.

01.14.04.0001.01

$$z \longrightarrow \tan^{-1}(z) :: \mathbb{C} \longrightarrow \mathbb{C}$$

Symmetries and periodicities

Parity

$\tan^{-1}(z)$ is an odd function.

01.14.04.0002.01

$$\tan^{-1}(-z) == -\tan^{-1}(z)$$

Mirror symmetry

01.14.04.0003.01

$$\tan^{-1}(\bar{z}) == \overline{\tan^{-1}(z)} \;/;\; i\, z \notin (-\infty, -1) \bigwedge i\, z \notin (1, \infty)$$

Periodicity

No periodicity

Poles and essential singularities

The function $\tan^{-1}(z)$ does not have poles and essential singularities.

01.14.04.0004.01

$$\mathcal{S}ing_z\left(\tan^{-1}(z)\right) == \{\}$$

Branch points

The function $\tan^{-1}(z)$ has two branch points: $z = \pm i$.

01.14.04.0005.01

$$\mathcal{BP}_z\left(\tan^{-1}(z)\right) == \{-i, i\}$$

01.14.04.0006.01

$$\mathcal{R}_z\left(\tan^{-1}(z), i\right) == \log$$

01.14.04.0007.01

$$\mathcal{R}_z\left(\tan^{-1}(z), -i\right) == \log$$

Branch cut endpoints

At $z = \tilde{\infty}$ two logarithmic branch points coincide in different directions: $\tan^{-1}(z) \propto \frac{\pi \sqrt{z^2}}{2\, z} + O\left(\frac{1}{z}\right) /; (|z| \to \infty)$. This results in $z == \tilde{\infty}$ not being a branch point anymore; instead, two disconnected sheets arise.

Branch cuts

The function $\tan^{-1}(z)$ is a single-valued function on the z-plane cut along the intervals $(-i\infty, -i]$ and $[i, i\infty)$.
The function $\tan^{-1}(z)$ is continuous from the left on the interval $(-i\infty, -i]$ and from the right on the interval $[i, i\infty)$.

01.14.04.0008.01

$$\mathcal{BC}_z\left(\tan^{-1}(z)\right) = \{\{(-i\infty, -i], 1\}, \{[i, i\infty), -1\}\}$$

01.14.04.0009.01

$$\lim_{\epsilon\to+0} \tan^{-1}(x-\epsilon) = \tan^{-1}(x) \;/;\; i\,x > 1$$

01.14.04.0010.01

$$\lim_{\epsilon\to+0} \tan^{-1}(x+\epsilon) = \tan^{-1}(x) + \pi \;/;\; i\,x > 1$$

01.14.04.0011.01

$$\lim_{\epsilon\to+0} \tan^{-1}(x+\epsilon) = \tan^{-1}(x) \;/;\; i\,x < -1$$

01.14.04.0012.01

$$\lim_{\epsilon\to+0} \tan^{-1}(x-\epsilon) = \tan^{-1}(x) - \pi \;/;\; i\,x < -1$$

Analytic continuations

The analytic continuation of $\tan^{-1}$ has infinitely many sheets; the values of $\tilde{\tan}^{-1}$ are $\tilde{\tan}^{-1}(z) = \tan^{-1}(z) + k\pi \;/;\; k \in \mathbb{Z}$.

Series representations

Generalized power series

Expansions at generic point $z = z_0$

For the function itself

01.14.06.0020.01

$$\tan^{-1}(z) \propto \tan^{-1}(z_0) + \frac{1}{2} i \left(\left\lfloor \frac{\arg(i(z_0 - z))}{2\pi} \right\rfloor \left(\log\left(\frac{1}{1 - i z_0}\right) + \log(1 - i z_0) \right) - \left\lfloor \frac{\arg(i(z - z_0))}{2\pi} \right\rfloor \left(\log\left(\frac{1}{i z_0 + 1}\right) + \log(i z_0 + 1) \right) \right) + \frac{z - z_0}{z_0^2 + 1} - \frac{z_0 (z - z_0)^2}{\left(z_0^2 + 1\right)^2} + \ldots \;/;\; (z \to z_0)$$

01.14.06.0021.01

$$\tan^{-1}(z) \propto \tan^{-1}(z_0) + \frac{1}{2} i \left(\left\lfloor \frac{\arg(i(z_0 - z))}{2\pi} \right\rfloor \left(\log\left(\frac{1}{1 - i z_0}\right) + \log(1 - i z_0) \right) - \left\lfloor \frac{\arg(i(z - z_0))}{2\pi} \right\rfloor \left(\log\left(\frac{1}{i z_0 + 1}\right) + \log(i z_0 + 1) \right) \right) + \frac{z - z_0}{z_0^2 + 1} - \frac{z_0 (z - z_0)^2}{\left(z_0^2 + 1\right)^2} + O\left((z - z_0)^3\right)$$

01.14.06.0022.01

$$\tan^{-1}(z) \equiv \tan^{-1}(z_0) + \frac{1}{2} i \left(-\left\lfloor \frac{\arg(i(z - z_0))}{2\pi} \right\rfloor \left(\log\left(\frac{1}{i z_0 + 1} \right) + \log(i z_0 + 1) \right) + \left\lfloor \frac{\arg(i(z_0 - z))}{2\pi} \right\rfloor \left(\log\left(\frac{1}{1 - i z_0} \right) + \log(1 - i z_0) \right) + \sum_{k=1}^{\infty} \frac{(i - z_0)^{-k} - (-i - z_0)^{-k}}{k} (z - z_0)^k \right)$$

01.14.06.0023.01

$$\tan^{-1}(z) \equiv \tan^{-1}(z_0) + \frac{1}{2} i \left(-\left\lfloor \frac{\arg(i(z - z_0))}{2\pi} \right\rfloor \left(\log\left(\frac{1}{i z_0 + 1} \right) + \log(i z_0 + 1) \right) + \left\lfloor \frac{\arg(i(z_0 - z))}{2\pi} \right\rfloor \left(\log\left(\frac{1}{1 - i z_0} \right) + \log(1 - i z_0) \right) \right) - \sum_{k=1}^{\infty} \frac{1}{k (z_0^2 + 1)^k} \sum_{j=0}^{k} \binom{k}{j} \cos\left(\frac{\pi (j + k + 1)}{2} \right) z_0^j (z - z_0)^k$$

01.14.06.0024.01

$$\tan^{-1}(z) \propto \tan^{-1}(z_0) + \frac{1}{2} i \left(-\left\lfloor \frac{\arg(i(z - z_0))}{2\pi} \right\rfloor \left(\log\left(\frac{1}{i z_0 + 1} \right) + \log(i z_0 + 1) \right) + \left\lfloor \frac{\arg(i(z_0 - z))}{2\pi} \right\rfloor \left(\log\left(\frac{1}{1 - i z_0} \right) + \log(1 - i z_0) \right) \right) + O(z - z_0)$$

Expansions on branch cuts

For the function itself

In the lower half-plane

01.14.06.0025.01

$$\tan^{-1}(z) \propto \tan^{-1}(x) - \pi \left\lfloor \frac{\arg(i(x - z))}{2\pi} \right\rfloor + \frac{z - x}{x^2 + 1} - \frac{x (z - x)^2}{(x^2 + 1)^2} + \ldots \;/;\; (z \to x) \land i x \in \mathbb{R} \land i x > 1$$

01.14.06.0026.01

$$\tan^{-1}(z) \propto \tan^{-1}(x) - \pi \left\lfloor \frac{\arg(i(x - z))}{2\pi} \right\rfloor + \frac{z - x}{x^2 + 1} - \frac{x (z - x)^2}{(x^2 + 1)^2} + O\left((z - x)^3\right) \;/;\; i x \in \mathbb{R} \land i x > 1$$

01.14.06.0027.01

$$\tan^{-1}(z) \equiv \tan^{-1}(x) - \pi \left\lfloor \frac{\arg(i(x - z))}{2\pi} \right\rfloor + \frac{1}{2} i \sum_{k=1}^{\infty} \frac{(i - x)^{-k} - (-i - x)^{-k}}{k} (z - x)^k \;/;\; i x \in \mathbb{R} \land i x > 1$$

01.14.06.0028.01

$$\tan^{-1}(z) \equiv \tan^{-1}(x) - \pi \left\lfloor \frac{\arg(i(x - z))}{2\pi} \right\rfloor - \sum_{k=1}^{\infty} \frac{1}{k (x^2 + 1)^k} \sum_{j=0}^{k} \binom{k}{j} \cos\left(\frac{1}{2} \pi (j + k + 1) \right) x^j (z - x)^k \;/;\; i x \in \mathbb{R} \land i x > 1$$

01.14.06.0029.01

$$\tan^{-1}(z) \propto \tan^{-1}(x) - \pi \left\lfloor \frac{\arg(i(x - z))}{2\pi} \right\rfloor + O(z - x) \;/;\; i x \in \mathbb{R} \land i x > 1$$

In the upper half-plane

01.14.06.0030.01

$$\tan^{-1}(z) \propto \tan^{-1}(x) + \pi \left\lfloor \frac{\arg(i\,(z-x))}{2\,\pi} \right\rfloor + \frac{z-x}{x^2+1} - \frac{x\,(z-x)^2}{\left(x^2+1\right)^2} + \ldots \;/;\; (z \to x) \land i\,x \in \mathbb{R} \land i\,x < -1$$

01.14.06.0031.01

$$\tan^{-1}(z) \propto \tan^{-1}(x) + \pi \left\lfloor \frac{\arg(i\,(z-x))}{2\,\pi} \right\rfloor + \frac{z-x}{x^2+1} - \frac{x\,(z-x)^2}{\left(x^2+1\right)^2} + O\left((z-x)^3\right) \;/;\; i\,x \in \mathbb{R} \land i\,x < -1$$

01.14.06.0032.01

$$\tan^{-1}(z) = \tan^{-1}(x) + \pi \left\lfloor \frac{\arg(i\,(z-x))}{2\,\pi} \right\rfloor + \frac{1}{2}\,i \sum_{k=1}^{\infty} \frac{(i-x)^{-k} - (-i-x)^{-k}}{k}\,(z-x)^k \;/;\; i\,x \in \mathbb{R} \land i\,x < -1$$

01.14.06.0033.01

$$\tan^{-1}(z) = \tan^{-1}(x) + \pi \left\lfloor \frac{\arg(i\,(z-x))}{2\,\pi} \right\rfloor - \sum_{k=1}^{\infty} \frac{1}{k\left(x^2+1\right)^k} \sum_{j=0}^{k} \binom{k}{j} \cos\left(\frac{1}{2}\,\pi\,(j+k+1)\right) x^j\,(z-x)^k \;/;\; i\,x \in \mathbb{R} \land i\,x < -1$$

01.14.06.0034.01

$$\tan^{-1}(z) \propto \tan^{-1}(x) + \pi \left\lfloor \frac{\arg(i\,(z-x))}{2\,\pi} \right\rfloor + O(z-x) \;/;\; i\,x \in \mathbb{R} \land i\,x < -1$$

Expansions at $z = 0$

For the function itself

01.14.06.0001.02

$$\tan^{-1}(z) \propto z - \frac{z^3}{3} + \frac{z^5}{5} - \ldots \;/;\; (z \to 0)$$

01.14.06.0035.01

$$\tan^{-1}(z) \propto z - \frac{z^3}{3} + \frac{z^5}{5} + O\left(z^7\right)$$

01.14.06.0002.01

$$\tan^{-1}(z) = \sum_{k=0}^{\infty} \frac{(-1)^k\,z^{2k+1}}{2\,k+1} \;/;\; |z| < 1$$

01.14.06.0003.01

$$\tan^{-1}(z) = z\,{}_2F_1\left(1, \frac{1}{2}; \frac{3}{2}; -z^2\right)$$

01.14.06.0004.02

$$\tan^{-1}(z) \propto z + O\left(z^3\right)$$

01.14.06.0036.01

$$\tan^{-1}(z) = F_\infty(z) \;/;\; \left(\left(F_n(z) = \sum_{k=0}^{n} \frac{(-1)^k\,z^{2k+1}}{2\,k+1} = \tan^{-1}(z) + \frac{(-1)^n\,z^{2n+3}}{2\,n+3}\,{}_2F_1\left(1, n+\frac{3}{2}; n+\frac{5}{2}; -z^2\right)\right) \bigwedge n \in \mathbb{N}\right)$$

Summed form of the truncated series expansion.

For small integer powers of the function

For the second power

01.14.06.0037.01

$$\tan^{-1}(z)^2 \propto z^2\left(1-\frac{2z^2}{3}+\frac{23z^4}{45}-\ldots\right) /; (z\to 0)$$

01.14.06.0038.01

$$\tan^{-1}(z)^2 \propto z^2\left(1-\frac{2z^2}{3}+\frac{23z^4}{45}+O(z^6)\right)$$

01.14.06.0039.01

$$\tan^{-1}(z)^2 = z^2\left(\sum_{k=0}^{\infty}\frac{(-1)^k z^{2k}}{2k+1}\right)^2 /; |z|<1$$

01.14.06.0040.01

$$\tan^{-1}(z)^2 = z^2\, {}_2F_1\left(1, \frac{1}{2}; \frac{3}{2}; -z^2\right)^2$$

01.14.06.0041.01

$$\tan^{-1}(z)^2 \propto z^2\left(1+O(z^2)\right)$$

01.14.06.0042.01

$$\tan^{-1}(z)^2 = F_\infty(z) /; \left(\left(F_n(z) = z^2\left(\sum_{k=0}^{n}\frac{(-1)^k z^{2k}}{2k+1}\right)^2 = \left(\tan^{-1}(z)+\frac{(-1)^n z^{2n+3}}{2n+3}\, {}_2F_1\left(1, n+\frac{3}{2}; n+\frac{5}{2}; -z^2\right)\right)^2\right) \bigwedge n\in\mathbb{N}\right)$$

Summed form of the truncated series expansion.

Expansions at $z = i$

For the function itself

01.14.06.0005.02

$$\tan^{-1}(z) \propto \frac{i}{2}\left(\log(2)-\log(i(z-i))-\frac{i}{2}(z-i)+\frac{1}{8}(z-i)^2+\ldots\right) /; (z\to i)$$

01.14.06.0043.01

$$\tan^{-1}(z) \propto \frac{i}{2}\left(\log(2)-\log(i(z-i))-\frac{i}{2}(z-i)+\frac{1}{8}(z-i)^2+O\left((z-i)^3\right)\right)$$

01.14.06.0006.01

$$\tan^{-1}(z) = \frac{i}{2}\left(\log(2)-\log(i(z-i))-\sum_{k=1}^{\infty}\frac{\left(\frac{i}{2}\right)^k (z-i)^k}{k}\right) /; |z-i|<2$$

01.14.06.0007.01

$$\tan^{-1}(z) = \frac{i}{2}\log(2)-\frac{i}{2}\log(i(z-i))+\frac{z-i}{4}\, {}_2F_1\left(1, 1; 2; \frac{i}{2}(z-i)\right)$$

01.14.06.0008.02

$$\tan^{-1}(z) \propto \frac{i}{2}\log(2)-\frac{i}{2}\log(i(z-i))+\frac{z-i}{4}+O\left((z-i)^2\right)$$

01.14.06.0044.01

$$\tan^{-1}(z) = F_\infty(z) /; \left(\left(F_n(z) = \frac{1}{2} i \log(2) - \frac{1}{2} i \log(i (z - i)) + \frac{1}{4} (z - i) \sum_{k=0}^{n} \frac{\left(\frac{i}{2}\right)^k (z - i)^k}{k + 1} = \tan^{-1}(z) - \frac{\left(2^{-n-3} i^{n+1}\right) (z - i)^{n+2}}{n + 2} \, {}_2F_1\left(1, n + 2; n + 3; \frac{1}{2} i (-i + z)\right)\right) \bigwedge n \in \mathbb{N}\right)$$

Summed form of the truncated series expansion.

For small integer powers of the function

For the second power

01.14.06.0045.01

$$\tan^{-1}(z)^2 \propto -\frac{1}{4} \log^2\left(\frac{i (z - i)}{2}\right) - \frac{i}{4} \log\left(\frac{i (z - i)}{2}\right) (z - i) \left(1 + \frac{i}{4} (z - i) - \frac{1}{12} (z - i)^2 + \ldots\right) + \frac{1}{16} (z - i)^2 \left(1 + \frac{i}{2} (z - i) - \frac{11}{48} (z - i)^2 + \ldots\right) /; (z \to i)$$

01.14.06.0046.01

$$\tan^{-1}(z)^2 \propto -\frac{1}{4} \log^2\left(\frac{i (z - i)}{2}\right) - \frac{i}{4} \log\left(\frac{i (z - i)}{2}\right) (z - i) \left(1 + \frac{i}{4} (z - i) - \frac{1}{12} (z - i)^2 + O\left((z - i)^3\right)\right) + \frac{1}{16} (z - i)^2 \left(1 + \frac{i}{2} (z - i) - \frac{11}{48} (z - i)^2 + O\left((z - i)^3\right)\right)$$

01.14.06.0047.01

$$\tan^{-1}(z)^2 = -\frac{1}{4} \log^2\left(\frac{i (z - i)}{2}\right) - \frac{i (z - i)}{4} \log\left(\frac{i (z - i)}{2}\right) \sum_{k=0}^{\infty} \left(\frac{i}{2}\right)^k \frac{(z - i)^k}{k + 1} + \frac{(z - i)^2}{16} \left(\sum_{k=0}^{\infty} \left(\frac{i}{2}\right)^k \frac{(z - i)^k}{k + 1}\right)^2 /; |z - i| < 2$$

01.14.06.0048.01

$$\tan^{-1}(z)^2 = -\frac{1}{4} \log^2\left(\frac{i (z - i)}{2}\right) - \frac{i}{4} (z - i) \log\left(\frac{i (z - i)}{2}\right) {}_2F_1\left(1, 1; 2; \frac{i (z - i)}{2}\right) + \frac{1}{16} (z - i)^2 \, {}_2F_1\left(1, 1; 2; \frac{i (z - i)}{2}\right)^2$$

01.14.06.0049.01

$$\tan^{-1}(z)^2 \propto -\frac{1}{4} \log^2\left(\frac{i (z - i)}{2}\right) - \frac{1}{4} i \log\left(\frac{i (z - i)}{2}\right) (1 + O(z - i)) (z - i) + \frac{(z - i)^2}{16} (1 + O(z - i))$$

01.14.06.0050.01

$$\tan^{-1}(z)^2 = F_\infty(z) /; \left(\left(F_n(z) = \left(-\frac{1}{2} i \log\left(\frac{i (z - i)}{2}\right) + \frac{1}{4} (z - i) \sum_{k=0}^{n} \frac{\left(\frac{i}{2}\right)^k (z - i)^k}{k + 1}\right)^2 = \left(\tan^{-1}(z) - \frac{2^{-n-3} i^{n+1}}{n + 2} (z - i)^{n+2} \, {}_2F_1\left(1, n + 2; n + 3; \frac{1}{2} i (z - i)\right)\right)^2\right) \bigwedge n \in \mathbb{N}\right)$$

Summed form of the truncated series expansion.

Expansions at $z == -i$

For the function itself

01.14.06.0009.02

$$\tan^{-1}(z) \propto \frac{i}{2}\left(-\log(2) + \log(-i\,(z+i)) - \frac{i}{2}\,(z+i) - \frac{1}{8}\,(z+i)^2 + \ldots\right) /; (z \to -i)$$

01.14.06.0051.01

$$\tan^{-1}(z) \propto \frac{i}{2}\left(-\log(2) + \log(-i\,(z+i)) - \frac{i}{2}\,(z+i) - \frac{1}{8}\,(z+i)^2 + O\!\left((z+i)^3\right)\right)$$

01.14.06.0010.01

$$\tan^{-1}(z) == \frac{i}{2}\left(-\log(2) + \log(-i\,(z+i)) + \sum_{k=1}^{\infty} \frac{\left(-\frac{i}{2}\right)^k (z+i)^k}{k}\right) /; |z+i| < 2$$

01.14.06.0011.01

$$\tan^{-1}(z) == -\frac{i}{2}\log(2) + \frac{i}{2}\log(-i\,(z+i)) + \frac{z+i}{4}\,{}_2F_1\!\left(1, 1; 2; -\frac{i}{2}\,(z+i)\right)$$

01.14.06.0012.02

$$\tan^{-1}(z) \propto -\frac{i}{2}\log(2) + \frac{i}{2}\log(-i\,(z+i)) + \frac{z+i}{4} + O\!\left((z+i)^2\right)$$

01.14.06.0052.01

$$\tan^{-1}(z) == F_\infty(z) /; \left(\left(F_n(z) == -\frac{1}{2}\,i\log(2) + \frac{1}{2}\,i\log(-i\,(z+i)) + \frac{1}{4}\,(z+i)\sum_{k=0}^{n} \frac{\left(-\frac{i}{2}\right)^k (z+i)^k}{k+1} == \tan^{-1}(z) - \frac{2^{-3-n}\,(-i)^{n+1}}{2+n}\,(z+i)^{n+2}\,{}_2F_1\!\left(1, n+2; n+3; -\frac{1}{2}\,i\,(i+z)\right)\right) \bigwedge n \in \mathbb{N}\right)$$

Summed form of the truncated series expansion.

For small integer powers of the function

For the second power

01.14.06.0053.01

$$\tan^{-1}(z)^2 \propto -\frac{1}{4}\log^2\!\left(-\frac{i\,(z+i)}{2}\right) + \frac{i}{4}\log\!\left(-\frac{i\,(z+i)}{2}\right)(z+i)\left(1 - \frac{i}{4}\,(z+i) - \frac{1}{12}\,(z+i)^2 + \ldots\right) + \frac{1}{16}\,(z+i)^2\left(1 - \frac{i}{2}\,(z+i) - \frac{11}{48}\,(z+i)^2 + \ldots\right) /; (z \to -i)$$

01.14.06.0054.01

$$\tan^{-1}(z)^2 \propto -\frac{1}{4}\log^2\!\left(-\frac{i\,(z+i)}{2}\right) + \frac{i}{4}\log\!\left(-\frac{i\,(z+i)}{2}\right)(z+i)\left(1 - \frac{i}{4}\,(z+i) - \frac{1}{12}\,(z+i)^2 + O\!\left((z+i)^3\right)\right) + \frac{1}{16}\,(z+i)^2\left(1 - \frac{i}{2}\,(z+i) - \frac{11}{48}\,(z+i)^2 + O\!\left((z+i)^3\right)\right)$$

01.14.06.0055.01

$$\tan^{-1}(z)^2 = -\frac{1}{4}\log^2\left(-\frac{i(z+i)}{2}\right) + \frac{i(z+i)}{4}\log\left(-\frac{i(z+i)}{2}\right)\sum_{k=0}^{\infty}\left(-\frac{i}{2}\right)^k\frac{(z+i)^k}{k+1} + \frac{(z+i)^2}{16}\left(\sum_{k=0}^{\infty}\left(-\frac{i}{2}\right)^k\frac{(z+i)^k}{k+1}\right)^2 \;/;\; |z+i| < 2$$

01.14.06.0056.01

$$\tan^{-1}(z)^2 = -\frac{1}{4}\log^2\left(-\frac{i(z+i)}{2}\right) + \frac{1}{4}i(z+i)\log\left(-\frac{i(z+i)}{2}\right){}_2F_1\left(1, 1; 2; -\frac{i(z+i)}{2}\right) + \frac{1}{16}(z+i)^2\,{}_2F_1\left(1, 1; 2; -\frac{i(z+i)}{2}\right)^2$$

01.14.06.0057.01

$$\tan^{-1}(z)^2 \propto -\frac{1}{4}\log^2\left(-\frac{i(z+i)}{2}\right) + \frac{1}{4}i\log\left(-\frac{i(z+i)}{2}\right)(1+O(z+i))(z+i) + \frac{(z+i)^2}{16}(1+O(z+i))$$

01.14.06.0058.01

$$\tan^{-1}(z)^2 = F_\infty(z) \;/;\; \left(\left(F_n(z) = \left(-\frac{1}{2}i\log\left(-\frac{i(z+i)}{2}\right) - \frac{z+i}{4}\sum_{k=0}^{n}\frac{\left(-\frac{i}{2}\right)^k(z+i)^k}{k+1}\right)^2 = \left(\tan^{-1}(z) - \frac{2^{-3-n}(-i)^{n+1}}{2+n}(z+i)^{n+2}\,{}_2F_1\left(1, n+2; n+3; -\frac{1}{2}i(z+i)\right)\right)^2\right) \bigwedge n \in \mathbb{N}\right)$$

Summed form of the truncated series expansion.

Expansions at $z = \infty$

For the function itself

01.14.06.0013.02

$$\tan^{-1}(z) \propto \frac{\pi z}{2\sqrt{z^2}} - \frac{1}{z} + \frac{1}{3z^3} - \frac{1}{5z^5} + \ldots \;/;\; |z| \to \infty$$

01.14.06.0059.01

$$\tan^{-1}(z) \propto \frac{\pi z}{2\sqrt{z^2}} - \frac{1}{z} + \frac{1}{3z^3} - \frac{1}{5z^5} + O\left(\frac{1}{z^7}\right)$$

01.14.06.0014.01

$$\tan^{-1}(z) = \frac{\pi z}{2\sqrt{z^2}} - \sum_{k=0}^{\infty}\frac{(-1)^k z^{-2k-1}}{2k+1} \;/;\; |z| > 1$$

01.14.06.0015.01

$$\tan^{-1}(z) = \frac{\pi z}{2\sqrt{z^2}} - \frac{1}{z}\,{}_2F_1\left(\frac{1}{2}, 1; \frac{3}{2}; -\frac{1}{z^2}\right) \;/;\; i z \notin (-1, 1)$$

01.14.06.0016.02

$$\tan^{-1}(z) \propto \frac{\pi\sqrt{z^2}}{2z} - \frac{1}{z} + O\left(\frac{1}{z^3}\right)$$

01.14.06.0060.01

$$\tan^{-1}(z) \propto \begin{cases} -\frac{\pi}{2} & \arg(z) \leq -\frac{\pi}{2} \bigvee \arg(z) > \frac{\pi}{2} \\ \frac{\pi}{2} & \text{True} \end{cases} /; (|z| \to \infty)$$

01.14.06.0061.01

$$\tan^{-1}(z) = F_\infty(z) /; \left(\left(F_n(z) = \frac{\pi\sqrt{z^2}}{2z} - \sum_{k=0}^{n} \frac{(-1)^k z^{-2k-1}}{2k+1} = \tan^{-1}(z) - \frac{(-1)^n z^{-2n-3}}{2n+3} \, {}_2F_1\left(1, n+\frac{3}{2}; n+\frac{5}{2}; -\frac{1}{z^2}\right) \right) \bigwedge n \in \mathbb{N} \right)$$

Summed form of the truncated series expansion.

For small integer powers of the function

For the second power

01.14.06.0062.01

$$\tan^{-1}(z)^2 \propto \frac{\pi^2}{4} - \frac{\pi}{\sqrt{z^2}} \left(1 - \frac{1}{3z^2} + \frac{1}{5z^4} + \ldots\right) + \frac{1}{z^2}\left(1 - \frac{2}{3z^2} + \frac{23}{45z^4} + \ldots\right) /; (|z| \to \infty)$$

01.14.06.0063.01

$$\tan^{-1}(z)^2 \propto \frac{\pi^2}{4} - \frac{\pi}{\sqrt{z^2}} \left(1 - \frac{1}{3z^2} + \frac{1}{5z^4} + O\left(\frac{1}{z^6}\right)\right) + \frac{1}{z^2}\left(1 - \frac{2}{3z^2} + \frac{23}{45z^4} + O\left(\frac{1}{z^6}\right)\right)$$

01.14.06.0064.01

$$\tan^{-1}(z)^2 = \frac{\pi^2}{4} - \frac{\pi}{\sqrt{z^2}} \sum_{k=0}^{\infty} \frac{(-1)^k z^{-2k}}{2k+1} + \frac{1}{z^2}\left(\sum_{k=0}^{\infty} \frac{(-1)^k z^{-2k}}{2k+1}\right)^2 /; |z| > 1$$

01.14.06.0065.01

$$\tan^{-1}(z)^2 = \frac{\pi^2}{4} - \frac{\pi z}{\sqrt{z^2}} \tan^{-1}\left(\frac{1}{z}\right) + \tan^{-1}\left(\frac{1}{z}\right)^2 /; i\, z \notin (-1, 1)$$

01.14.06.0066.01

$$\tan^{-1}(z)^2 = \frac{\pi^2}{4} - \frac{\pi}{\sqrt{z^2}} \, {}_2F_1\left(\frac{1}{2}, 1; \frac{3}{2}; -\frac{1}{z^2}\right) + \frac{1}{z^2} \, {}_2F_1\left(\frac{1}{2}, 1; \frac{3}{2}; -\frac{1}{z^2}\right)^2 /; i\, z \notin (-1, 1)$$

01.14.06.0067.01

$$\tan^{-1}(z)^2 \propto \frac{\pi^2}{4} - \frac{\pi}{\sqrt{z^2}} \left(1 + O\left(\frac{1}{z^2}\right)\right) + \frac{1}{z^2}\left(1 + O\left(\frac{1}{z^2}\right)\right)$$

01.14.06.0068.01

$$\tan^{-1}(z)^2 \propto \frac{\pi^2}{4} /; (|z| \to \infty)$$

01.14.06.0069.01

$$\tan^{-1}(z)^2 = F_\infty(z) /; \left(\left(F_n(z) = \frac{\pi^2}{4} - \frac{\pi}{\sqrt{z^2}} \sum_{k=0}^{n} \frac{(-1)^k z^{-2k}}{2k+1} + \frac{1}{z^2}\left(\sum_{k=0}^{n} \frac{(-1)^k z^{-2k}}{2k+1}\right)^2 = \left(\tan^{-1}(z) - \frac{(-1)^n z^{-2n-3}}{2n+3} {}_2F_1\left(1, n+\frac{3}{2}; n+\frac{5}{2}; -\frac{1}{z^2}\right)\right)^2\right) \land n \in \mathbb{N}\right)$$

Summed form of the truncated series expansion.

Residue representations

01.14.06.0017.01

$$\tan^{-1}(z) = \frac{z}{2} \sum_{j=0}^{\infty} \operatorname{res}_s\left(\frac{\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\left(z^2\right)^{-s}}{\Gamma\left(\frac{3}{2}-s\right)} \Gamma(s)\right)(-j) /; |z| < 1$$

01.14.06.0018.01

$$\tan^{-1}(z) = -\frac{z}{2}\left(\sum_{j=0}^{\infty} \operatorname{res}_s\left(\frac{\Gamma(s)\,\Gamma(1-s)\left(z^2\right)^{-s}}{\Gamma\left(\frac{3}{2}-s\right)} \Gamma\left(\frac{1}{2}-s\right)\right)\left(\frac{1}{2}+j\right) + \sum_{j=0}^{\infty} \operatorname{res}_s\left(\frac{\Gamma(s)\,\Gamma\left(\frac{1}{2}-s\right)\left(z^2\right)^{-s}}{\Gamma\left(\frac{3}{2}-s\right)} \Gamma(1-s)\right)(1+j)\right) /; |z| > 1$$

Other series representations

01.14.06.0019.01

$$\tan^{-1}(z) = \sum_{k=0}^{\infty} \frac{(-1)^k F_{2k+1}}{5^k (2k+1)} \left(\frac{2z}{\sqrt{4z^2/5+1}+1}\right)^{2k+1}$$

Integral representations

On the real axis

Of the direct function

01.14.07.0001.01

$$\tan^{-1}(z) = z \int_0^1 \frac{1}{1+z^2 t^2}\, dt$$

Contour integral representations

01.14.07.0002.01

$$\tan^{-1}(z) = \frac{z}{4\pi i} \int_{\mathcal{L}} \frac{\Gamma(s)\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\left(z^2\right)^{-s}}{\Gamma\left(\frac{3}{2}-s\right)}\, ds /; \left|\arg\left(z^2\right)\right| < \pi$$

01.14.07.0003.01

$$\tan^{-1}(z) = -\frac{i z}{4\pi^{3/2}} \int_{\mathcal{L}} \Gamma(s)^2\, \Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\left(1+z^2\right)^{-s}\, ds /; \left|\arg\left(1+z^2\right)\right| < \pi$$

01.14.07.0004.01

$$\tan^{-1}(z) = \frac{z}{4\pi i}\int_{\gamma-i\infty}^{\gamma+i\infty}\frac{\Gamma(s)\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\left(z^2\right)^{-s}}{\Gamma\left(\frac{3}{2}-s\right)}\,ds\,/;\,0<\gamma<\frac{1}{2}\bigwedge\left|\arg\left(z^2\right)\right|<\pi$$

01.14.07.0005.01

$$\tan^{-1}(z) = -\frac{i z}{4\pi^{3/2}}\int_{\gamma-i\infty}^{\gamma+i\infty}\Gamma(s)^2\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\left(1+z^2\right)^{-s}\,ds\,/;\,0<\gamma<\frac{1}{2}\bigwedge\left|\arg\left(1+z^2\right)\right|<\pi$$

Continued fraction representations

01.14.10.0001.01

$$\tan^{-1}(z) = \cfrac{z}{1+\cfrac{z^2}{3+\cfrac{4z^2}{5+\cfrac{9z^2}{7+\cfrac{16z^2}{9+\cfrac{25z^2}{11+\cfrac{36z^2}{13+\ldots}}}}}}}\,/;\,i z\notin(-\infty,-1)\bigwedge i z\notin(1,\infty)$$

01.14.10.0002.01

$$\tan^{-1}(z) = \frac{z}{1+\mathrm{K}_k\left(k^2 z^2,\,2k+1\right)_1^{\infty}}\,/;\,i z\notin(-\infty,-1)\bigwedge i z\notin(1,\infty)$$

01.14.10.0003.01

$$\tan^{-1}(z) = z-\cfrac{z^3}{3+\cfrac{9z^2}{5+\cfrac{4z^2}{7+\cfrac{25z^2}{9+\cfrac{16z^2}{11+\cfrac{49z^2}{13+\cfrac{36z^2}{15+\ldots}}}}}}}\,/;\,i z\notin(-\infty,-1)\bigwedge i z\notin(1,\infty)$$

01.14.10.0004.01

$$\tan^{-1}(z) = z-\frac{z^3}{3+\mathrm{K}_k\left(\left(k-(-1)^k+1\right)^2 z^2,\,2k+3\right)_1^{\infty}}\,/;\,i z\notin(-\infty,-1)\bigwedge i z\notin(1,\infty)$$

01.14.10.0005.01

$$\tan^{-1}(z) = \cfrac{z}{1+z^2-\cfrac{2z^2}{3-\cfrac{2z^2}{5(1+z^2)-\cfrac{12z^2}{7-\cfrac{12z^2}{9(1+z^2)-\cfrac{30z^2}{11-\cfrac{30z^2}{13(1+z^2)-\ldots}}}}}}} \;/;\; i\,z \notin (-\infty, -1) \bigwedge i\,z \notin (1, \infty)$$

01.14.10.0006.01

$$\tan^{-1}(z) = \frac{z}{1+z^2+\mathrm{K}_k\left(2z^2\left\lfloor\frac{k+1}{2}\right\rfloor\left(1-2\left\lfloor\frac{k+1}{2}\right\rfloor\right), (2k+1)\left(\frac{1}{2}\left(1+(-1)^k\right)z^2+1\right)\right)_1^\infty} \;/;\; i\,z \notin (-\infty, -1) \bigwedge i\,z \notin (1, \infty)$$

Differential equations

Ordinary linear differential equations and wronskians

For the direct function itself

01.14.13.0001.01

$$\left(1+z^2\right) w''(z) + 2\,z\,w'(z) = 0 \;/;\; w(z) = \tan^{-1}(z) \bigwedge w(0) = 0 \bigwedge w'(0) = 1$$

01.14.13.0002.01

$$\left(z^2+1\right) w''(z) + 2\,z\,w'(z) = 0 \;/;\; w(z) = c_1 + c_2 \tan^{-1}(z)$$

01.14.13.0003.01

$$W_z\left(1, \tan^{-1}(z)\right) = \frac{1}{1+z^2}$$

01.14.13.0004.01

$$\left(1+z^2\right) w'(z) = 1 \;/;\; w(z) = \tan^{-1}(z) \bigwedge w(0) = 0$$

Transformations

Transformations and argument simplifications

Argument involving basic arithmetic operations

Involving $\tan^{-1}(-z)$

Involving $\tan^{-1}(-z)$ and $\tan^{-1}(z)$

01.14.16.0015.01

$$\tan^{-1}(-z) = -\tan^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{1}{z}\right)$

Involving $\tan^{-1}\left(\frac{1}{z}\right)$ and $\tan^{-1}(z)$

01.14.16.0016.01

$$\tan^{-1}\left(\frac{1}{z}\right) = \frac{\pi}{2} - \tan^{-1}(z) \;/;\; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.16.0017.01

$$\tan^{-1}\left(\frac{1}{z}\right) = -\tan^{-1}(z) - \frac{\pi}{2} \;/;\; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.16.0018.01

$$\tan^{-1}\left(\frac{1}{z}\right) = \frac{\pi\sqrt{z^2}}{2\,z} - \tan^{-1}(z) \;/;\; i\,z \notin (-1,\, 1)$$

01.14.16.0019.01

$$\tan^{-1}\left(\frac{1}{z}\right) = \frac{\pi}{2}\operatorname{sgn}(\operatorname{Re}(z)) - \tan^{-1}(z) \;/;\; \operatorname{Re}(z) \neq 0$$

01.14.16.0020.01

$$\tan^{-1}\left(\frac{1}{z}\right) = \frac{\pi\,z}{2}\sqrt{\frac{1}{z^2}}\,\sqrt{\frac{1}{z^2+1}}\,\sqrt{z^2+1} - \tan^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.16.0021.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - \tan^{-1}\left(\frac{1}{\sqrt{z}}\right) \;/;\; z \notin (-1,\, 0)$$

01.14.16.0022.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\frac{\pi}{2} - \tan^{-1}\left(\frac{1}{\sqrt{z}}\right) \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.16.0023.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}\sqrt{\frac{z+1}{z}}\,\sqrt{\frac{z}{z+1}} - \tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\tan^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.16.0024.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{\pi}{2} - \tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |\arg(z)| < \pi$$

01.14.16.0025.01

$$\tan^{-1}\left(\sqrt{z}\right) == -\frac{\pi}{2} + \tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.16.0026.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{\pi}{2} + \tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.16.0027.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{\pi}{2} \sqrt{\frac{z+1}{z}} \sqrt{\frac{z}{z+1}} - \sqrt{z} \sqrt{\frac{1}{z}} \tan^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\tan^{-1}\left(1 \Big/ \sqrt{\frac{1}{z}}\right)$

01.14.16.0028.01

$$\tan^{-1}\left(\sqrt{z}\right) == \tan^{-1}\left(1 \Big/ \sqrt{\frac{1}{z}}\right) /; |\arg(z)| < \pi$$

01.14.16.0029.01

$$\tan^{-1}\left(\sqrt{z}\right) == -\tan^{-1}\left(1 \Big/ \sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.16.0030.01

$$\tan^{-1}\left(\sqrt{z}\right) == \sqrt{z} \sqrt{\frac{1}{z}} \tan^{-1}\left(1 \Big/ \sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\tan^{-1}\left(\sqrt{z}\right)$

01.14.16.0031.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2} - \tan^{-1}\left(\sqrt{z}\right) /; z \notin (-1, 0)$$

01.14.16.0032.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -\frac{\pi}{2} - \tan^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.16.0033.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2}\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - \tan^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{z^2}\right)$

Involving $\tan^{-1}\left(\sqrt{z^2}\right)$ and $\tan^{-1}(z)$

01.14.16.0034.01

$$\tan^{-1}\left(\sqrt{z^2}\right) == \tan^{-1}(z) \;/;\; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.16.0035.01

$$\tan^{-1}\left(\sqrt{z^2}\right) == -\tan^{-1}(z) \;/;\; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.16.0036.01

$$\tan^{-1}\left(\sqrt{z^2}\right) == \frac{\sqrt{z^2}}{z}\tan^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{z^2}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0037.01

$$\tan^{-1}\left(\sqrt{z^2}\right) == \frac{\pi}{2} - \tan^{-1}\left(\frac{1}{z}\right) \;/;\; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.16.0038.01

$$\tan^{-1}\left(\sqrt{z^2}\right) == \tan^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.16.0039.01

$$\tan^{-1}\left(\sqrt{z^2}\right) == \tan^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.16.0040.01

$$\tan^{-1}\left(\sqrt{z^2}\right) == -\tan^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.16.0041.01

$$\tan^{-1}\left(\sqrt{z^2}\right) == \frac{\pi}{2}\sqrt{\frac{z-i}{z+i}}\sqrt{\frac{z+i}{z-i}} - \frac{\sqrt{z^2}}{z}\tan^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(a\,(b\,z^c)^m\right)$

Involving $\tan^{-1}(a\,(b\,z^c)^m)$ and $\tan^{-1}(a\,b^m\,z^{m\,c})$

01.14.16.0042.01

$$\tan^{-1}(a\,(b\,z^c)^m) = \frac{(b\,z^c)^m}{b^m\,z^{m\,c}}\tan^{-1}(a\,b^m\,z^{m\,c})\;/;\;2\,m \in \mathbb{Z}$$

Involving $\tan^{-1}\left(\frac{1-z}{1+z}\right)$

Involving $\tan^{-1}\left(\frac{1-z}{1+z}\right)$ and $\tan^{-1}(z)$

01.14.16.0043.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = \frac{\pi}{4} - \tan^{-1}(z)\;/;\;|z| < 1 \bigvee -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.16.0044.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = -\tan^{-1}(z) - \frac{3\,\pi}{4}\;/;\;|z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.16.0045.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = -\frac{\pi}{4}\left(-\left(\frac{\sqrt{z^2}}{z} - 1\right)\left(\frac{1-z^2}{z}\sqrt{\frac{z^2}{\left(z^2-1\right)^2}} + 1\right) - 2\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}} + 1\right) - \tan^{-1}(z)\;/;\;|z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1-z}{1+z}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0046.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = \tan^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{4}\;/;\;|z| > 1 \bigvee -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.16.0047.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = \tan^{-1}\left(\frac{1}{z}\right) + \frac{3\,\pi}{4}\;/;\;|z| < 1 \bigwedge \left(\frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.16.0048.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = \frac{\pi}{4}\left(1 - \left(\sqrt{\frac{1}{z^2}}\,z - 1\right)\left(\frac{z^2-1}{z}\sqrt{\frac{z^2}{\left(z^2-1\right)^2}} + 1\right) - 2\sqrt{\frac{z-i}{z}}\,\sqrt{\frac{z}{z-i}}\right) + \tan^{-1}\left(\frac{1}{z}\right)\;/;\;|z| \neq 1$$

Involving $\tan^{-1}\left(\frac{z-1}{z+1}\right)$

Involving $\tan^{-1}\left(\frac{z-1}{z+1}\right)$ and $\tan^{-1}(z)$

01.14.16.0049.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -\frac{\pi}{4} + \tan^{-1}(z)\;/;\;|z| < 1 \bigvee -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.16.0050.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = \tan^{-1}(z) + \frac{3\,\pi}{4}\;/;\;|z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.16.0051.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = \frac{\pi}{4}\left(-\left(\frac{\sqrt{z^2}}{z}-1\right)\left(\frac{1-z^2}{z}\sqrt{\frac{z^2}{(z^2-1)^2}}+1\right)-2\sqrt{1-i\,z}\sqrt{\frac{1}{1-i\,z}}+1\right)+\tan^{-1}(z) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{z-1}{z+1}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0052.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -\tan^{-1}\left(\frac{1}{z}\right)+\frac{\pi}{4} /; |z| > 1 \bigvee -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.16.0053.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -\tan^{-1}\left(\frac{1}{z}\right)-\frac{3\pi}{4} /; |z| < 1 \bigwedge \left(\frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.16.0054.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -\frac{\pi}{4}\left(1-\left(\sqrt{\frac{1}{z^2}}\,z-1\right)\left(\frac{z^2-1}{z}\sqrt{\frac{z^2}{(z^2-1)^2}}+1\right)-2\sqrt{\frac{z-i}{z}}\sqrt{\frac{z}{z-i}}\right)-\tan^{-1}\left(\frac{1}{z}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1+z}{1-z}\right)$

Involving $\tan^{-1}\left(\frac{1+z}{1-z}\right)$ and $\tan^{-1}(z)$

01.14.16.0055.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = \tan^{-1}(z)+\frac{\pi}{4} /; |z| < 1 \bigvee \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.16.0056.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = \tan^{-1}(z)-\frac{3\pi}{4} /; |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.16.0057.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = \tan^{-1}(z)-\frac{1}{4}\pi\left(\left(\frac{\sqrt{z^2}}{z}+1\right)\left(1-\frac{1-z^2}{z}\sqrt{\frac{z^2}{(z^2-1)^2}}\right)-2\sqrt{i\,z+1}\sqrt{\frac{1}{i\,z+1}}+1\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1+z}{1-z}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0058.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = -\tan^{-1}\left(\frac{1}{z}\right)-\frac{\pi}{4} /; |z| > 1 \bigvee \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.16.0059.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = -\tan^{-1}\left(\frac{1}{z}\right)+\frac{3\pi}{4} /; |z| < 1 \bigwedge -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.16.0060.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = \frac{\pi}{4}\left(\left(\sqrt{\frac{1}{z^2}}\, z+1\right)\left(\frac{1-z^2}{z}\sqrt{\frac{z^2}{(1-z^2)^2}}+1\right)-2\sqrt{\frac{z+i}{z}}\sqrt{\frac{z}{z+i}}+1\right)-\tan^{-1}\left(\frac{1}{z}\right) /;\ |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{z+1}{z-1}\right)$

Involving $\tan^{-1}\left(\frac{z+1}{z-1}\right)$ and $\tan^{-1}(z)$

01.14.16.0061.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = -\tan^{-1}(z) - \frac{\pi}{4} /;\ |z| < 1 \bigvee \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.16.0062.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = -\tan^{-1}(z) + \frac{3\pi}{4} /;\ |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.16.0063.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = \frac{\pi}{4}\left(\left(\frac{\sqrt{z^2}}{z}+1\right)\left(1-\frac{1-z^2}{z}\sqrt{\frac{z^2}{(z^2-1)^2}}\right)-2\sqrt{i\,z+1}\sqrt{\frac{1}{i\,z+1}}+1\right)-\tan^{-1}(z) /;\ |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{z+1}{z-1}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0064.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = \tan^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{4} /;\ |z| > 1 \bigvee \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.16.0065.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = \tan^{-1}\left(\frac{1}{z}\right) - \frac{3\pi}{4} /;\ |z| < 1 \bigwedge -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.16.0066.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = -\frac{\pi}{4}\left(1+\left(\sqrt{\frac{1}{z^2}}\, z+1\right)\left(\frac{1-z^2}{z}\sqrt{\frac{z^2}{(1-z^2)^2}}+1\right)-2\sqrt{\frac{z+i}{z}}\sqrt{\frac{z}{z+i}}\right)+\tan^{-1}\left(\frac{1}{z}\right) /;\ |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2z}{1-z^2}\right)$

Involving $\tan^{-1}\left(\frac{2z}{1-z^2}\right)$ and $\tan^{-1}(z)$

01.14.16.0067.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = 2\tan^{-1}(z) /;\ |z| < 1$$

01.14.16.0068.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = 2\tan^{-1}(z) - \pi /;\ |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.16.0069.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) == 2\tan^{-1}(z)+\pi\,/;\,|z|>1 \bigwedge \left(\frac{\pi}{2}<\arg(z)\leq\pi \bigvee -\pi<\arg(z)\leq-\frac{\pi}{2}\right)$$

01.14.16.0070.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) == 2\tan^{-1}(z)-\frac{\sqrt{z^2}\,\pi}{z}\,/;\,|z|>1$$

01.14.16.0071.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) == \frac{\pi\sqrt{z^2}}{2z}\left(\frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2}-1\right)+2\tan^{-1}(z)\,/;\,|z|\neq 1$$

Involving $\tan^{-1}\left(\frac{2z}{1-z^2}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0072.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) == \pi-2\tan^{-1}\left(\frac{1}{z}\right)\,/;\,|z|<1 \bigwedge -\frac{\pi}{2}\leq\arg(z)<\frac{\pi}{2}$$

01.14.16.0073.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) == -2\tan^{-1}\left(\frac{1}{z}\right)-\pi\,/;\,|z|<1 \bigwedge \left(\frac{\pi}{2}\leq\arg(z)\leq\pi \bigvee -\pi<\arg(z)<-\frac{\pi}{2}\right)$$

01.14.16.0074.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) == z\,\pi\sqrt{\frac{1}{z^2}}-2\tan^{-1}\left(\frac{1}{z}\right)\,/;\,|z|<1$$

01.14.16.0075.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) == -2\tan^{-1}\left(\frac{1}{z}\right)\,/;\,|z|>1$$

01.14.16.0076.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) == \frac{1}{2}\left(\frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2}+1\right)z\sqrt{\frac{1}{z^2}}\,\pi-2\tan^{-1}\left(\frac{1}{z}\right)\,/;\,|z|\neq 1$$

Involving $\tan^{-1}\left(\frac{2z}{z^2-1}\right)$

Involving $\tan^{-1}\left(\frac{2z}{z^2-1}\right)$ and $\tan^{-1}(z)$

01.14.16.0077.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) == -2\tan^{-1}(z)\,/;\,|z|<1$$

01.14.16.0078.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) == -2\tan^{-1}(z)+\pi\,/;\,|z|>1 \bigwedge -\frac{\pi}{2}<\arg(z)\leq\frac{\pi}{2}$$

01.14.16.0079.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -2\tan^{-1}(z) - \pi \;/;\; |z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}\right)$$

01.14.16.0080.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -2\tan^{-1}(z) + \frac{\sqrt{z^2}\,\pi}{z} \;/;\; |z| > 1$$

01.14.16.0081.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -\frac{\pi\sqrt{z^2}}{2z}\left(\frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2} - 1\right) - 2\tan^{-1}(z) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2z}{z^2-1}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0082.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -\pi + 2\tan^{-1}\left(\frac{1}{z}\right) \;/;\; |z| < 1 \bigwedge -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.16.0083.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = 2\tan^{-1}\left(\frac{1}{z}\right) + \pi \;/;\; |z| < 1 \bigwedge \left(\frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.16.0084.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -z\,\pi\sqrt{\frac{1}{z^2}} + 2\tan^{-1}\left(\frac{1}{z}\right) \;/;\; |z| < 1$$

01.14.16.0085.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = 2\tan^{-1}\left(\frac{1}{z}\right) \;/;\; |z| > 1$$

01.14.16.0086.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -\frac{1}{2}\left(\frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2} + 1\right) z\sqrt{\frac{1}{z^2}}\,\pi + 2\tan^{-1}\left(\frac{1}{z}\right) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1-z^2}{2z}\right)$

Involving $\tan^{-1}\left(\frac{1-z^2}{2z}\right)$ and $\tan^{-1}(z)$

01.14.16.0087.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = \frac{\pi}{2} - 2\tan^{-1}(z) \;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.16.0088.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = -2\tan^{-1}(z) - \frac{\pi}{2} \;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.16.0089.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) == \frac{\pi}{2} z \sqrt{\frac{1}{z^2}} \sqrt{\frac{1}{z^2+1}} \sqrt{z^2+1} - 2\tan^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{1-z^2}{2z}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0090.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) == 2\tan^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; \mathrm{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.16.0091.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) == 2\tan^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; \mathrm{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.16.0092.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) == 2\tan^{-1}\left(\frac{1}{z}\right) - \frac{\pi z}{2} \sqrt{\frac{1}{z^2}} \sqrt{\frac{1}{z^2+1}} \sqrt{z^2+1}$$

Involving $\tan^{-1}\left(\frac{z^2-1}{2z}\right)$

Involving $\tan^{-1}\left(\frac{z^2-1}{2z}\right)$ and $\tan^{-1}(z)$

01.14.16.0093.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) == -\frac{\pi}{2} + 2\tan^{-1}(z) \;/;\; \mathrm{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.16.0094.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) == 2\tan^{-1}(z) + \frac{\pi}{2} \;/;\; \mathrm{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.16.0095.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) == -\frac{\pi}{2} z \sqrt{\frac{1}{z^2}} \sqrt{\frac{1}{z^2+1}} \sqrt{z^2+1} + 2\tan^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{z^2-1}{2z}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0096.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) == -2\tan^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; \mathrm{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.16.0097.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) == -2\tan^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; \mathrm{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.16.0098.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = -2\tan^{-1}\left(\frac{1}{z}\right) + \frac{\pi z}{2}\sqrt{\frac{1}{z^2}}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right)$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right)$ and $\tan^{-1}\left(\sqrt{z}\right)$

01.14.16.0099.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) = 2\tan^{-1}\left(\sqrt{z}\right) /;\ |z| < 1$$

01.14.16.0100.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) = 2\tan^{-1}\left(\sqrt{z}\right) - \pi /;\ |z| > 1$$

01.14.16.0101.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) = 2\tan^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2}\left(1 - \frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\right) /;\ |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right)$ and $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.16.0102.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) = \pi - 2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ |z| < 1 \bigwedge |\arg(z)| < \pi$$

01.14.16.0103.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) = -2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) - \pi /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.16.0104.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) = \sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\,\pi - 2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ |z| < 1$$

01.14.16.0105.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) = -2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ |z| > 1$$

01.14.16.0106.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) = \frac{1}{2}\left(\frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2} + 2\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 1\right)\pi - 2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right)$ and $\tan^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.16.0107.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == \pi - 2\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |z| < 1 \bigwedge |\arg(z)| < \pi$$

01.14.16.0108.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == 2\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) - \pi /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.16.0109.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == \sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\,\pi - 2\sqrt{z}\sqrt{\frac{1}{z}}\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |z| < 1$$

01.14.16.0110.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == -2\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |z| > 1 \bigwedge |\arg(z)| < \pi$$

01.14.16.0111.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == 2\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.16.0112.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == -2\sqrt{z}\sqrt{\frac{1}{z}}\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |z| > 1$$

01.14.16.0113.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == \frac{1}{2}\left(\frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2} + 2\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 1\right)\pi - 2\sqrt{z}\sqrt{\frac{1}{z}}\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right)$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right)$ and $\tan^{-1}\left(\sqrt{z}\right)$

01.14.16.0114.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == -2\tan^{-1}\left(\sqrt{z}\right) /; |z| < 1$$

01.14.16.0115.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == -2\tan^{-1}\left(\sqrt{z}\right) + \pi /; |z| > 1$$

01.14.16.0116.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = -2\tan^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2}\left(1 - \frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right)$ and $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.16.0117.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = -\pi + 2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) /; |z| < 1 \bigwedge |\arg(z)| < \pi$$

01.14.16.0118.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = 2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) + \pi /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.16.0119.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = -\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\,\pi + 2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) /; |z| < 1$$

01.14.16.0120.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = 2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) /; |z| > 1$$

01.14.16.0121.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = -\frac{\pi}{2}\left(\frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2} + 2\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 1\right) + 2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right)$ and $\tan^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.16.0122.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = -\pi + 2\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |z| < 1 \bigwedge |\arg(z)| < \pi$$

01.14.16.0123.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = -2\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) + \pi /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.16.0124.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = -\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\,\pi + 2\sqrt{z}\sqrt{\frac{1}{z}}\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |z| < 1$$

01.14.16.0125.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = 2\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |z| > 1 \bigwedge |\arg(z)| < \pi$$

01.14.16.0126.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == -2\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.16.0127.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == 2\sqrt{z}\sqrt{\frac{1}{z}}\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |z| > 1$$

01.14.16.0128.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == -\frac{1}{2}\left(\frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2} + 2\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 1\right)\pi + 2\sqrt{z}\sqrt{\frac{1}{z}}\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right)$ and $\tan^{-1}\left(\sqrt{z}\right)$

01.14.16.0129.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) == \frac{\pi}{2} - 2\tan^{-1}\left(\sqrt{z}\right) /; z \notin (-1, 0)$$

01.14.16.0130.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) == -\frac{\pi}{2} - 2\tan^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.16.0131.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) == \frac{\pi}{2}\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 2\tan^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right)$ and $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.16.0132.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) == 2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2} /; z \notin (-1, 0)$$

01.14.16.0133.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) == 2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) + \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.16.0134.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) == 2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2}\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right)$ and $\tan^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.16.0135.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) = 2\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} \;/;\; |\arg(z)| < \pi$$

01.14.16.0136.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) = -2\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.16.0137.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) = -2\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.16.0138.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) = 2\sqrt{z}\sqrt{\frac{1}{z}}\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2}\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right)$ and $\tan^{-1}\left(\sqrt{z}\right)$

01.14.16.0139.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -\frac{\pi}{2} + 2\tan^{-1}\left(\sqrt{z}\right) \;/;\; z \notin (-1, 0)$$

01.14.16.0140.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = \frac{\pi}{2} + 2\tan^{-1}\left(\sqrt{z}\right) \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.16.0141.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -\frac{\pi}{2}\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} + 2\tan^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right)$ and $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.16.0142.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) + \frac{\pi}{2} \;/;\; z \notin (-1, 0)$$

01.14.16.0143.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.16.0144.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -2\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) + \frac{\pi}{2}\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right)$ and $\tan^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.16.0145.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -2\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2} \;/;\; |\arg(z)| < \pi$$

01.14.16.0146.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = 2\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.16.0147.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = 2\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.16.0148.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -2\sqrt{z}\sqrt{\frac{1}{z}}\tan^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2}\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}+c\,z\right)$

Involving $\tan^{-1}\left(\sqrt{1+z^2}+z\right)$ and $\tan^{-1}(z)$

01.14.16.0149.01

$$\tan^{-1}\left(\sqrt{1+z^2}+z\right) = \frac{1}{2}\tan^{-1}(z) + \frac{\pi}{4}$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}+z\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0150.01

$$\tan^{-1}\left(z+\sqrt{z^2+1}\right) = \frac{\pi}{2} - \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) \;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.16.0151.01

$$\tan^{-1}\left(z+\sqrt{z^2+1}\right) = -\frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) \;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.16.0152.01

$$\tan^{-1}\left(z+\sqrt{z^2+1}\right) = \frac{\pi}{4}\left(\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2}}\,z+1\right) - \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}-z\right)$ and $\tan^{-1}(z)$

01.14.16.0153.01

$$\tan^{-1}\left(\sqrt{1+z^2}-z\right) = \frac{\pi}{4} - \frac{1}{2}\tan^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}-z\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0154.01

$$\tan^{-1}\left(\sqrt{z^2+1}-z\right) = \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.16.0155.01

$$\tan^{-1}\left(\sqrt{z^2+1}-z\right) = \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.16.0156.01

$$\tan^{-1}\left(\sqrt{1+z^2}-z\right) = \frac{1}{4}\pi\left(1 - z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right) + \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}+c z}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}+z}\right)$ and $\tan^{-1}(z)$

01.14.16.0157.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right) = \frac{\pi}{4} - \frac{1}{2}\tan^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}+z}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0158.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right) = \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.16.0159.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right) = \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.16.0160.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right) = \frac{1}{4}\pi\left(1 - z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right) + \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}-z}\right)$ and $\tan^{-1}(z)$

01.14.16.0161.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2+1}-z}\right) = \frac{1}{2}\tan^{-1}(z) + \frac{\pi}{4}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}-z}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0162.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2+1}-z}\right) = \frac{\pi}{2} - \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.16.0163.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2+1}-z}\right) = -\frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.16.0164.01

$$\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}-z}\right) = \frac{\pi}{4}\left(1 + z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right) - \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}+a}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right)$ and $\tan^{-1}(z)$

01.14.16.0165.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) = \frac{\pi}{2} - \frac{1}{2}\tan^{-1}(z) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.16.0166.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) = -\frac{1}{2}\tan^{-1}(z) - \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.16.0167.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) == \frac{\pi}{2} z \sqrt{\frac{1}{z^2}} \sqrt{z^2+1} \sqrt{\frac{1}{z^2+1}} - \frac{1}{2}\tan^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0168.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) == \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{4} \;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.16.0169.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) == \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{4} \;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.16.0170.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) == \frac{1}{4}\pi \sqrt{\frac{1}{z^2+1}} \sqrt{z^2+1} \sqrt{\frac{1}{z^2}}\, z + \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right)$ and $\tan^{-1}(z)$

01.14.16.0171.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}-1}{z}\right) == \frac{1}{2}\tan^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0172.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right) == \frac{\pi}{4} - \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) \;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.16.0173.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right) == -\frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{4} \;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.16.0174.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right) == \frac{\pi z}{4} \sqrt{\frac{1}{z^2}} \sqrt{z^2+1} \sqrt{\frac{1}{z^2+1}} - \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+a}\right)$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right)$ and $\tan^{-1}(z)$

01.14.16.0175.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right) = \frac{1}{2}\tan^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0176.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}+1}\right) = \frac{\pi}{4} - \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.16.0177.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}+1}\right) = -\frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{4} /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.16.0178.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right) = \frac{\pi\,z}{4}\sqrt{\frac{1}{z^2}}\,\sqrt{z^2+1}\,\sqrt{\frac{1}{z^2+1}} - \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right)$ and $\tan^{-1}(z)$

01.14.16.0179.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = \frac{\pi}{2} - \frac{1}{2}\tan^{-1}(z) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.16.0180.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = -\frac{1}{2}\tan^{-1}(z) - \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.16.0181.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right) = \frac{\pi}{2}\,z\sqrt{\frac{1}{z^2}}\,\sqrt{z^2+1}\,\sqrt{\frac{1}{z^2+1}} - \frac{1}{2}\tan^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right)$ and $\tan^{-1}\left(\frac{1}{z}\right)$

01.14.16.0182.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = \frac{\pi}{4} + \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.16.0183.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{4} /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.16.0184.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right) = \frac{\pi z}{4}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2}} + \frac{1}{2}\tan^{-1}\left(\frac{1}{z}\right)$$

Power of arguments

01.14.16.0008.01

$$\tan^{-1}(z^n) = \frac{\pi}{4}(1+(-1)^n) + \sum_{k=1}^{n}(-1)^{k-1}\tan^{-1}\left(\frac{z-\cos\left(\frac{(2k-1)\pi}{2n}\right)}{\sin\left(\frac{(2k-1)\pi}{2n}\right)}\right) /; |z| < 1 \bigwedge n \in \mathbb{N}^+$$

01.14.16.0009.01

$$\tan^{-1}(z^n) = \sum_{k=1}^{n}(-1)^{k-1}\tan^{-1}\left(\frac{z\sin\left(\frac{(2k-1)\pi}{2n}\right)}{1-z\cos\left(\frac{(2k-1)\pi}{2n}\right)}\right) /; |z| < 1 \bigwedge n \in \mathbb{N}^+$$

Products, sums, and powers of the direct function

Sums of the direct function

01.14.16.0010.01

$$\tan^{-1}(x) + \tan^{-1}(y) = \tan^{-1}\left(\frac{x+y}{1-x\,y}\right) + \frac{\pi}{2}(\operatorname{sgn}(x\,y-1)+1)\operatorname{sgn}(x) /; x\,y \neq 1$$

01.14.16.0185.01

$$\tan^{-1}(x) + \tan^{-1}(y) = \tan^{-1}\left(\frac{x+y}{1-x\,y}\right) - \pi\left\lfloor\frac{\pi-\arg(1+i\,x)-\arg(1+i\,y)+\arg(1-x\,y)}{2\pi}\right\rfloor + \pi\left\lfloor\frac{\pi-\arg(1-i\,x)-\arg(1-i\,y)+\arg(1-x\,y)}{2\pi}\right\rfloor$$

01.14.16.0186.01

$$\tan^{-1}(x)+\tan^{-1}(y)=\frac{1}{2}\pi\left(-\sqrt{\frac{1}{x^2}}\;x-\sqrt{\frac{1}{y^2}}\;y-\frac{(x+y)\sqrt{\frac{(x\,y-1)^2}{(x+y)^2}}}{x\,y-1}+1\right)+\cot^{-1}\left(\frac{1-x\,y}{x+y}\right)+$$
$$\pi\left\lfloor\frac{2\arg\left(\frac{1}{y}+\frac{1}{x}\right)-2\arg\left(-1-\frac{i}{x}\right)-2\arg\left(-1-\frac{i}{y}\right)+\pi}{4\pi}\right\rfloor-\pi\left\lfloor\frac{-2\arg\left(\frac{i}{x}-1\right)-2\arg\left(\frac{i}{y}-1\right)+2\arg\left(\frac{1}{y}+\frac{1}{x}\right)+3\pi}{4\pi}\right\rfloor$$

01.14.16.0012.01

$$\tan^{-1}(x)+\tan^{-1}(y)+\tan^{-1}(z)=0\;/;\;x+y+z=x\,y\,z$$

01.14.16.0187.01

$$\tan^{-1}(x)+\tan^{-1}(y)+\tan^{-1}(z)=\tan^{-1}\left(\frac{y\,z\,x-x-y-z}{x\,y+z\,y+x\,z-1}\right)-$$
$$\pi\left\lfloor\frac{-\arg\left(\frac{i(-x-y)}{x\,y-1}+1\right)-\arg(i\,z+1)+\arg\left(1-\frac{(-x-y)\,z}{x\,y-1}\right)+\pi}{2\pi}\right\rfloor+\pi\left\lfloor\frac{-\arg\left(1-\frac{i(-x-y)}{x\,y-1}\right)+\arg\left(1-\frac{(-x-y)\,z}{x\,y-1}\right)-\arg(1-i\,z)+\pi}{2\pi}\right\rfloor-$$
$$\pi\left\lfloor\frac{-\arg(i\,x+1)-\arg(i\,y+1)+\arg(1-x\,y)+\pi}{2\pi}\right\rfloor+\pi\left\lfloor\frac{-\arg(1-i\,x)-\arg(1-i\,y)+\arg(1-x\,y)+\pi}{2\pi}\right\rfloor$$

Differences of the direct function

01.14.16.0011.01

$$\tan^{-1}(x)-\tan^{-1}(y)=\tan^{-1}\left(\frac{x-y}{1+x\,y}\right)+\frac{\pi}{2}\,(1-\operatorname{sgn}(x\,y+1))\operatorname{sgn}(x)\;/;\;x\,y\neq-1$$

01.14.16.0188.01

$$\tan^{-1}(x)-\tan^{-1}(y)=$$
$$\tan^{-1}\left(\frac{x-y}{1+x\,y}\right)-\pi\left\lfloor\frac{\pi-\arg(1+i\,x)-\arg(1-i\,y)+\arg(1+x\,y)}{2\pi}\right\rfloor+\pi\left\lfloor\frac{\pi-\arg(1-i\,x)-\arg(1+i\,y)+\arg(1+x\,y)}{2\pi}\right\rfloor$$

01.14.16.0189.01

$$\tan^{-1}(x)-\tan^{-1}(y)=\frac{1}{2}\pi\left(-\sqrt{\frac{1}{x^2}}\;x+\frac{(x-y)\sqrt{\frac{(x\,y+1)^2}{(x-y)^2}}}{x\,y+1}+y\sqrt{\frac{1}{y^2}}+1\right)+\cot^{-1}\left(\frac{x\,y+1}{x-y}\right)+$$
$$\pi\left\lfloor\frac{-2\arg\left(\frac{i}{y}-1\right)-2\arg\left(-1-\frac{i}{x}\right)+2\arg\left(\frac{1}{x}-\frac{1}{y}\right)+\pi}{4\pi}\right\rfloor-\pi\left\lfloor\frac{-2\arg\left(\frac{i}{x}-1\right)+2\arg\left(\frac{1}{x}-\frac{1}{y}\right)-2\arg\left(-1-\frac{i}{y}\right)+3\pi}{4\pi}\right\rfloor$$

Linear combinations of the direct function

01.14.16.0190.01

$$a\tan^{-1}(x)+b\tan^{-1}(y)=a\pi\left\lfloor\frac{\arg(i x+1)-\arg(1-i x)+\pi}{2\pi}\right\rfloor-2 i\pi\left(\left\lfloor\frac{-\arg\left((i y+1)^{-\frac{1}{2}(i b)}\right)-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}(1-i y)^{\frac{i b}{2}}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\frac{1}{2}\operatorname{Re}(b\log(i y+1))+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}(1-i y)^{\frac{i b}{2}}\right)\right)}{2\pi}\right\rfloor\right)-2 i\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\right)-\arg\left((1-i y)^{\frac{i b}{2}}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i x}{i x+1}\right)\right)}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}(b\log(1-i y))}{2\pi}\right\rfloor\right)+\log\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}(1-i y)^{\frac{i b}{2}}(i y+1)^{-\frac{1}{2}(i b)}\right)$$

01.14.16.0191.01

$$a\tan^{-1}(x)+b\tan^{-1}(y)=a\pi\left\lfloor\frac{\arg(i x+1)-\arg(1-i x)+\pi}{2\pi}\right\rfloor-2 i\pi\left(\left\lfloor\frac{-\arg\left((i y+1)^{-\frac{1}{2}(i b)}\right)-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}(1-i y)^{\frac{i b}{2}}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\frac{1}{2}\operatorname{Re}(b\log(i y+1))+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}(1-i y)^{\frac{i b}{2}}\right)\right)}{2\pi}\right\rfloor\right)-2 i\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\right)-\arg\left((1-i y)^{\frac{i b}{2}}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i x}{i x+1}\right)\right)}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}(b\log(1-i y))}{2\pi}\right\rfloor\right)+i\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left((i y+1)^{-\frac{1}{2}(i b)}(1-i y)^{\frac{i b}{2}}\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}+1\right)}{2\pi}+\frac{1}{2}\right\rfloor}\right)+2 i\tan^{-1}\left(\frac{i\left(1-\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}(1-i y)^{\frac{i b}{2}}(i y+1)^{-\frac{1}{2}(i b)}\right)}{(i y+1)^{-\frac{1}{2}(i b)}(1-i y)^{\frac{i b}{2}}\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}+1}\right)$$

Related transformations

Sums involving the direct function

Involving log(z)

01.14.16.0192.01

$$\tan^{-1}(x)+\log(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg(y)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}(\log(y))}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}y\right)$$

01.14.16.0193.01

$$\tan^{-1}(x)+\log(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg(y)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}(\log(y))}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(y\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}+1\right)}{2\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}y\right)}{y\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}+1}\right)$$

Involving $\sin^{-1}(z)$

01.14.16.0194.01

$$\tan^{-1}(x)+\sin^{-1}(y)=-\frac{\sqrt{x^2+1}\,\sqrt{\frac{\left(\sqrt{1-y^2}\,x+y\right)^2}{x^2+1}}}{\sqrt{1-y^2}\,x+y}\sin^{-1}\left(\frac{\sqrt{1-y^2}-x\,y}{\sqrt{x^2+1}}\right)+\pi\left(\frac{\sqrt{\frac{\left(\sqrt{1-y^2}\,x+y\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{\sqrt{1-y^2}\,x+y}+1\right)\left\lfloor\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(i\,y+\sqrt{1-y^2}\right)}{2\pi}\right\rfloor-\pi\left(\frac{\sqrt{x^2+1}\,\sqrt{\frac{\left(\sqrt{1-y^2}\,x+y\right)^2}{x^2+1}}}{\sqrt{1-y^2}\,x+y}-1\right)\left\lfloor-\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(i\,y+\sqrt{1-y^2}\right)-\pi}{2\pi}\right\rfloor+\frac{\pi\sqrt{\frac{\left(\sqrt{1-y^2}\,x+y\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{2\left(\sqrt{1-y^2}\,x+y\right)}$$

01.14.16.0195.01

$$\tan^{-1}(x)+\sin^{-1}(y)=\frac{1}{2}\pi\left(2\left(1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-y^2}\,x+y}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(i\,y+\sqrt{1-y^2}\right)}{2\pi}\right\rfloor + (-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-y^2}\,x+y}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}+(-1)^{\left\lfloor \frac{-\arg\left(x^2+1\right)+2\arg\left(x\,y-\sqrt{1-y^2}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor \frac{\arg\left(x^2+1\right)-2\arg\left(\sqrt{1-y^2}\,x+y\right)+\pi}{2\pi}\right\rfloor-2\left\lfloor \frac{\arg\left(x^2+1\right)-2\arg\left(\sqrt{1-y^2}\,x+y\right)+2\pi}{4\pi}\right\rfloor} - 2\left(-1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-y^2}\,x+y}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(i\,y+\sqrt{1-y^2}\right)}{2\pi}\right\rfloor\right) - \tan^{-1}\left(\frac{(-1)^{-\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-y^2}\,x+y}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\sqrt{x^2+1}\,\sqrt{\frac{x^2-\left(x\,y-\sqrt{1-y^2}\right)^2+1}{x^2+1}}}{x\,y-\sqrt{1-y^2}}\right)$$

Involving $\cos^{-1}(z)$

01.14.16.0196.01

$$\tan^{-1}(x)+\cos^{-1}(y)=\frac{\pi}{2}+\frac{\sqrt{x^2+1}\,\sqrt{\frac{\left(y-x\sqrt{1-y^2}\right)^2}{x^2+1}}}{y-x\sqrt{1-y^2}}\sin^{-1}\left(\frac{x\,y+\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)-\pi\left(\frac{\sqrt{\frac{\left(y-x\sqrt{1-y^2}\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{y-x\sqrt{1-y^2}}+1\right)\left\lfloor\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(i\,y+\sqrt{1-y^2}\right)}{2\pi}\right\rfloor+\pi\left(\frac{\sqrt{x^2+1}\,\sqrt{\frac{\left(y-x\sqrt{1-y^2}\right)^2}{x^2+1}}}{y-x\sqrt{1-y^2}}-1\right)\left\lfloor-\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(i\,y+\sqrt{1-y^2}\right)-\pi}{2\pi}\right\rfloor-\frac{\pi\sqrt{x^2+1}\,\sqrt{\frac{\left(y-x\sqrt{1-y^2}\right)^2}{x^2+1}}}{2\left(y-x\sqrt{1-y^2}\right)}$$

01.14.16.0197.01

$$\tan^{-1}(x)+\cos^{-1}(y)=\tan^{-1}\left(\frac{(-1)^{-\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{y-x\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\sqrt{x^2+1}\sqrt{1-\frac{\left(-x\,y-\sqrt{1-y^2}\right)^2}{x^2+1}}}{-x\,y-\sqrt{1-y^2}}\right)-$$
$$\frac{1}{2}\pi\left(-1+2\left(1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{y-x\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\right)\left\lfloor \frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(i\,y+\sqrt{1-y^2}\right)}{2\pi}\right\rfloor+$$
$$(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{y-x\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}-(-1)^{\left\lfloor -\frac{\arg(x^2+1)}{2\pi}+\frac{\arg\left(x\,y+\sqrt{1-y^2}\right)}{\pi}+\frac{1}{2}\right\rfloor+\left\lfloor \frac{\arg(x^2+1)}{2\pi}+\frac{1}{2}-\frac{\arg\left(y-x\sqrt{1-y^2}\right)}{\pi}\right\rfloor-2\left\lfloor \frac{\arg(x^2+1)}{4\pi}+\frac{1}{2}-\frac{\arg\left(y-x\sqrt{1-y^2}\right)}{2\pi}\right\rfloor}-$$
$$2\left(-1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{y-x\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(i\,y+\sqrt{1-y^2}\right)}{2\pi}\right\rfloor\Bigg)$$

Involving $\cot^{-1}(z)$

01.14.16.0013.01

$$\cot^{-1}(y)+\tan^{-1}(x)=\frac{\pi}{2}\operatorname{sgn}(x\,y+1)\left(\operatorname{sgn}(x-y)+1\right)-\tan^{-1}\left(\frac{x\,y+1}{x-y}\right)\;/;\;y>0$$

01.14.16.0198.01

$$\tan^{-1}(x)+\cot^{-1}(y)=$$
$$\tan^{-1}\left(\frac{-x\,y-1}{x-y}\right)-\pi\left\lfloor \frac{-\arg(i\,x+1)-\arg\left(1+\frac{i}{y}\right)+\arg\left(1-\frac{x}{y}\right)+\pi}{2\pi}\right\rfloor+\pi\left\lfloor \frac{-\arg(1-i\,x)-\arg\left(1-\frac{i}{y}\right)+\arg\left(1-\frac{x}{y}\right)+\pi}{2\pi}\right\rfloor$$

01.14.16.0199.01

$$\tan^{-1}(x)+\cot^{-1}(y)=-\tan^{-1}\left(\frac{x\,y+1}{x-y}\right)+\frac{\pi}{2}\left(1-\frac{\sqrt{y^2}}{y}\right)-\pi\left\lfloor-\frac{\arg(i\,y+1)}{2\,\pi}\right\rfloor+\pi\left\lfloor-\frac{\arg(1-i\,y)}{2\,\pi}\right\rfloor+$$
$$\pi\left\lfloor\frac{\pi-2\arg(1-i\,x)+2\arg(x-y)-2\arg(i\,y+1)}{4\,\pi}\right\rfloor-\pi\left\lfloor\frac{3\,\pi-2\arg(i\,x+1)+2\arg(x-y)-2\arg(1-i\,y)}{4\,\pi}\right\rfloor$$

01.14.16.0200.01

$$\tan^{-1}(x)+\cot^{-1}(y)=$$
$$\tan^{-1}\left(\frac{1+x\,y}{y-x}\right)-\pi\left\lfloor\frac{-\arg(i\,x+1)-\arg\left(1+\frac{i}{y}\right)+\arg\left(1-\frac{x}{y}\right)+\pi}{2\,\pi}\right\rfloor+\pi\left\lfloor\frac{-\arg(1-i\,x)-\arg\left(1-\frac{i}{y}\right)+\arg\left(1-\frac{x}{y}\right)+\pi}{2\,\pi}\right\rfloor$$

Involving $\csc^{-1}(z)$

01.14.16.0201.01

$$\tan^{-1}(x)+\csc^{-1}(y)=-\frac{\sqrt{x^2+1}\,\sqrt{\frac{\left(\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}\right)^2}{x^2+1}}}{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}\sin^{-1}\left(\frac{\sqrt{1-\frac{1}{y^2}}-\frac{x}{y}}{\sqrt{x^2+1}}\right)+$$
$$\pi\left(\frac{\sqrt{\frac{\left(\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}+1\right)\left\lfloor\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)}{2\,\pi}\right\rfloor-$$
$$\pi\left(\frac{\sqrt{x^2+1}\,\sqrt{\frac{\left(\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}\right)^2}{x^2+1}}}{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}-1\right)\left\lfloor-\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)-\pi}{2\,\pi}\right\rfloor+\frac{\pi\sqrt{\frac{\left(\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{2\left(\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}\right)}$$

01.14.16.0202.01

$$\tan^{-1}(x)+\csc^{-1}(y)=\frac{1}{2}\pi\left(2\left(1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)}{2\pi}\right\rfloor+\right.$$

$$(-1)^{\left\lfloor -\frac{\arg(x^2+1)}{2\pi}+\frac{\arg\left(\frac{x}{y}-\sqrt{1-\frac{1}{y^2}}\right)}{\pi}+\frac{1}{2}\right\rfloor+\left\lfloor \frac{\arg(x^2+1)}{2\pi}+\frac{1}{2}-\frac{\arg\left(\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}\right)}{\pi}\right\rfloor-2\left\lfloor \frac{\arg(x^2+1)}{4\pi}+\frac{1}{2}-\frac{\arg\left(\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}\right)}{2\pi}\right\rfloor}+$$

$$\left.(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}-2\left(-1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)}{2\pi}\right\rfloor\right)-$$

$$\tan^{-1}\left(\frac{(-1)^{-\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\sqrt{x^2+1}\,\sqrt{1-\frac{\left(\frac{x}{y}-\sqrt{1-\frac{1}{y^2}}\right)^2}{x^2+1}}}{\frac{x}{y}-\sqrt{1-\frac{1}{y^2}}}\right)$$

Involving $\sec^{-1}(z)$

01.14.16.0203.01

$$\tan^{-1}(x)+\sec^{-1}(y)=\frac{\pi}{2}+\frac{\sqrt{\frac{\left(\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}}\sin^{-1}\left(\frac{\frac{x}{y}+\sqrt{1-\frac{1}{y^2}}}{\sqrt{x^2+1}}\right)-$$

$$\pi\left(\frac{\sqrt{\frac{\left(\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}}+1\right)\left\lfloor\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)}{2\pi}\right\rfloor+$$

$$\pi\left(\frac{\sqrt{x^2+1}\,\sqrt{\frac{\left(\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}\right)^2}{x^2+1}}}{\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}}-1\right)\left\lfloor-\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)-\pi}{2\pi}\right\rfloor-\frac{\pi\sqrt{x^2+1}\,\sqrt{\frac{\left(\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}\right)^2}{x^2+1}}}{2\left(\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}\right)}$$

01.14.16.0204.01

$$\tan^{-1}(x)+\sec^{-1}(y)=\tan^{-1}\left(\frac{(-1)^{-\left\lfloor\frac{1}{2}-\frac{\arg\left(\frac{x\sqrt{1-\frac{1}{y^2}}-\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\sqrt{x^2+1}\,\sqrt{1-\frac{\left(\frac{x}{y}+\sqrt{1-\frac{1}{y^2}}\right)^2}{x^2+1}}}{\frac{x}{y}+\sqrt{1-\frac{1}{y^2}}}\right)+$$

$$\frac{1}{2}\pi\left(1+2\left(1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{x\sqrt{1-\frac{1}{y^2}}-\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\right)\left\lfloor \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}-\frac{i}{y}\right)}{2\pi}\right\rfloor +$$

$$(-1)^{\left\lfloor -\frac{\arg\left(x^2+1\right)}{2\pi}+\frac{\arg\left(-\frac{x}{y}-\sqrt{1-\frac{1}{y^2}}\right)}{\pi}+\frac{1}{2}\right\rfloor+\left\lfloor \frac{\arg\left(x^2+1\right)}{2\pi}+\frac{1}{2}-\frac{\arg\left(x\sqrt{1-\frac{1}{y^2}}-\frac{1}{y}\right)}{\pi}\right\rfloor-2\left\lfloor \frac{\arg\left(x^2+1\right)}{4\pi}+\frac{1}{2}-\frac{\arg\left(x\sqrt{1-\frac{1}{y^2}}-\frac{1}{y}\right)}{2\pi}\right\rfloor} +$$

$$(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{x\sqrt{1-\frac{1}{y^2}}-\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}-2\left(-1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{x\sqrt{1-\frac{1}{y^2}}-\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}-\frac{i}{y}\right)}{2\pi}\right\rfloor\Bigg)$$

Involving $\sinh^{-1}(z)$

01.14.16.0205.01

$$\tan^{-1}(x)+\sinh^{-1}(y)=\pi\left\lfloor \frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor -$$

$$2\,i\,\pi\left(\left\lfloor \frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(y+\sqrt{y^2+1}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor \frac{\pi-\operatorname{Im}\left(\log\left(y+\sqrt{y^2+1}\right)\right)}{2\pi}\right\rfloor+\left\lfloor \frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+$$

$$\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\left(y+\sqrt{y^2+1}\right)\right)$$

01.14.16.0206.01

$$\tan^{-1}(x)+\sinh^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(y+\sqrt{y^2+1}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(y+\sqrt{y^2+1}\right)\right)}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\left(y+\sqrt{y^2+1}\right)\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}+1\right)}{2\,\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\left(y+\sqrt{y^2+1}\right)\right)}{\left(y+\sqrt{y^2+1}\right)\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}+1}\right)$$

01.14.16.0207.01

$$\tan^{-1}(x)+i\sinh^{-1}(y)=-\frac{\sqrt{x^2+1}\,\sqrt{\frac{\left(\sqrt{y^2+1}\,x+i\,y\right)^2}{x^2+1}}}{\sqrt{y^2+1}\,x+i\,y}\sin^{-1}\left(\frac{\sqrt{y^2+1}-i\,x\,y}{\sqrt{x^2+1}}\right)+\pi\left(\frac{\sqrt{\frac{\left(\sqrt{y^2+1}\,x+i\,y\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{\sqrt{y^2+1}\,x+i\,y}+1\right)\left\lfloor\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{y^2+1}-y\right)}{2\,\pi}\right\rfloor-\pi\left(\frac{\sqrt{x^2+1}\,\sqrt{\frac{\left(\sqrt{y^2+1}\,x+i\,y\right)^2}{x^2+1}}}{\sqrt{y^2+1}\,x+i\,y}-1\right)\left\lfloor-\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{y^2+1}-y\right)-\pi}{2\,\pi}\right\rfloor+\frac{\pi\sqrt{\frac{\left(\sqrt{y^2+1}\,x+i\,y\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{2\left(\sqrt{y^2+1}\,x+i\,y\right)}$$

01.14.16.0208.01

$$\tan^{-1}(x)+i\sinh^{-1}(y)=\frac{1}{2}\pi\left(2\left(1+(-1)^{\left\lfloor\frac{1}{2}-\frac{\arg\left(\frac{\sqrt{y^2+1}\;x+i\,y}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{y^2+1}-y\right)}{2\pi}\right\rfloor+\right.$$

$$(-1)^{\left\lfloor\frac{1}{2}-\frac{\arg\left(\frac{\sqrt{y^2+1}\;x+i\,y}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}+(-1)^{\left\lfloor-\frac{\arg(x^2+1)}{2\pi}+\frac{\arg\left(i\,x\,y-\sqrt{y^2+1}\right)}{\pi}+\frac{1}{2}\right\rfloor+\left\lfloor\frac{\arg(x^2+1)}{2\pi}+\frac{1}{2}-\frac{\arg\left(\sqrt{y^2+1}\;x+i\,y\right)}{\pi}\right\rfloor-2\left\lfloor\frac{\arg(x^2+1)}{4\pi}+\frac{1}{2}-\frac{\arg\left(\sqrt{y^2+1}\;x+i\,y\right)}{2\pi}\right\rfloor}-$$

$$\left.2\left(-1+(-1)^{\left\lfloor\frac{1}{2}-\frac{\arg\left(\frac{\sqrt{y^2+1}\;x+i\,y}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor\frac{1}{2}-\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{y^2+1}-y\right)}{2\pi}\right\rfloor\right)-$$

$$\tan^{-1}\left(\frac{(-1)^{-\left\lfloor\frac{1}{2}-\frac{\arg\left(\frac{\sqrt{y^2+1}\;x+i\,y}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\sqrt{x^2+1}\;\sqrt{1-\frac{\left(i\,x\,y-\sqrt{y^2+1}\right)^2}{x^2+1}}}{i\,x\,y-\sqrt{y^2+1}}\right)$$

Involving $\cosh^{-1}(z)$

01.14.16.0209.01

$$\tan^{-1}(x)+\cosh^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor-$$

$$2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(y+\sqrt{y-1}\;\sqrt{y+1}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(y+\sqrt{y-1}\;\sqrt{y+1}\right)\right)}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+$$

$$\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\left(y+\sqrt{y-1}\;\sqrt{y+1}\right)\right)$$

01.14.16.0210.01

$$\tan^{-1}(x)+\cosh^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor-$$
$$2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(y+\sqrt{y-1}\,\sqrt{y+1}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(y+\sqrt{y-1}\,\sqrt{y+1}\right)\right)}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+$$
$$i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\left(y+\sqrt{y-1}\,\sqrt{y+1}\right)\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}+1\right)}{2\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\left(y+\sqrt{y-1}\,\sqrt{y+1}\right)\right)}{\left(y+\sqrt{y-1}\,\sqrt{y+1}\right)\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}+1}\right)$$

01.14.16.0211.01

$$\tan^{-1}(x) + i\cosh^{-1}(y) = -\tan^{-1}\left(\frac{(-1)^{-\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{y - i x\sqrt{y-1}\,\sqrt{y+1}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor} \sqrt{x^2+1}\,\sqrt{1 - \frac{\left(x y + i\sqrt{y-1}\,\sqrt{y+1}\right)^2}{x^2+1}}}{x y + i\sqrt{y-1}\,\sqrt{y+1}}\right) +$$

$$\frac{1}{2}(-1)^{\left\lfloor -\frac{\arg(x^2+1)}{2\pi} + \frac{\arg\left(x y + i\sqrt{y-1}\,\sqrt{y+1}\right)}{\pi} + \frac{1}{2} \right\rfloor + \left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{y - i x\sqrt{y-1}\,\sqrt{y+1}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor} \pi +$$

$$\frac{1}{4}\left(1 + (-1)^{-\left\lfloor -\frac{\arg(1-y)}{2\pi} \right\rfloor}\right)\pi\left(2\left(1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{\sqrt{1-y^2}\,x + y}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right)\left\lfloor \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right) + \arg\left(i y + \sqrt{1-y^2}\right)}{2\pi} \right\rfloor +\right.$$

$$\left.(-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{\sqrt{1-y^2}\,x + y}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor} - 2\left(-1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{\sqrt{1-y^2}\,x + y}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right)\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right) + \arg\left(i y + \sqrt{1-y^2}\right)}{2\pi} \right\rfloor - 1\right) -$$

$$\frac{1}{4}\left(1 - (-1)^{-\left\lfloor -\frac{\arg(1-y)}{2\pi} \right\rfloor}\right)\pi\left(2\left(1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{y - x\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right)\left\lfloor \frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right) + \arg\left(i y + \sqrt{1-y^2}\right)}{2\pi} \right\rfloor +\right.$$

$$\left.(-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{y - x\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor} - 2\left(-1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{y - x\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right)\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right) + \arg\left(i y + \sqrt{1-y^2}\right)}{2\pi} \right\rfloor - 1\right)$$

Involving $\tanh^{-1}(z)$

01.14.16.0212.01

$$\tan^{-1}(x)+\tanh^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-$$
$$2\,i\,\pi\left(\left\lfloor\frac{-\frac{1}{2}\arg(y+1)-\arg\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1-y}}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Im}(\log(y+1))}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1-y}}\right)\right)}{2\,\pi}\right\rfloor\right)-$$
$$2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)+\frac{1}{2}\arg(1-y)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\frac{1}{2}\operatorname{Im}(\log(1-y))+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+\log\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\sqrt{y+1}}{\sqrt{1-y}}\right)$$

01.14.16.0213.01

$$\tan^{-1}(x)+\tanh^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-$$
$$2\,i\,\pi\left(\left\lfloor\frac{-\frac{1}{2}\arg(y+1)-\arg\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1-y}}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Im}(\log(y+1))}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1-y}}\right)\right)}{2\,\pi}\right\rfloor\right)-$$
$$2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)+\frac{1}{2}\arg(1-y)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\frac{1}{2}\operatorname{Im}(\log(1-y))+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+$$
$$i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\frac{\sqrt{y+1}\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1-y}}+1\right)}{2\,\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\sqrt{y+1}}{\sqrt{1-y}}\right)}{\frac{\sqrt{y+1}\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1-y}}+1}\right)$$

01.14.16.0214.01

$$\tan^{-1}(x)+\tanh^{-1}(x)=\log\left(\left(\frac{i+x}{i-x}\right)^{i/2}\frac{\sqrt{1+x}}{\sqrt{1-x}}\right)\;/;\;i\,z\notin(-\infty,-1)$$

01.14.16.0215.01

$$\tan^{-1}(x)+i\tanh^{-1}(y)=$$
$$\tan^{-1}\left(\frac{x+i\,y}{1-i\,x\,y}\right)-\pi\left\lfloor\frac{-\arg(i\,x+1)-\arg(1-y)+\arg(1-i\,x\,y)+\pi}{2\,\pi}\right\rfloor+\pi\left\lfloor\frac{-\arg(1-i\,x)-\arg(y+1)+\arg(1-i\,x\,y)+\pi}{2\,\pi}\right\rfloor$$

Involving $\coth^{-1}(z)$

01.14.16.0216.01

$$\coth^{-1}(y)+\tan^{-1}(x)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-$$
$$2\,i\,\pi\left(\left\lfloor\frac{-\frac{1}{2}\arg\left(1+\frac{1}{y}\right)-\arg\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1-\frac{1}{y}}}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Im}\left(\log\left(1+\frac{1}{y}\right)\right)}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1-\frac{1}{y}}}\right)\right)}{2\,\pi}\right\rfloor\right)-$$
$$2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)+\frac{1}{2}\arg\left(1-\frac{1}{y}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\frac{1}{2}\operatorname{Im}\left(\log\left(1-\frac{1}{y}\right)\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+\log\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\sqrt{1+\frac{1}{y}}}{\sqrt{1-\frac{1}{y}}}\right)$$

01.14.16.0217.01

$$\coth^{-1}(y)+\tan^{-1}(x)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-$$
$$2\,i\,\pi\left(\left\lfloor\frac{-\frac{1}{2}\arg\left(1+\frac{1}{y}\right)-\arg\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1-\frac{1}{y}}}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Im}\left(\log\left(1+\frac{1}{y}\right)\right)}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1-\frac{1}{y}}}\right)\right)}{2\,\pi}\right\rfloor\right)-$$
$$2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)+\frac{1}{2}\arg\left(1-\frac{1}{y}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\frac{1}{2}\operatorname{Im}\left(\log\left(1-\frac{1}{y}\right)\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+$$
$$i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\frac{\sqrt{1+\frac{1}{y}}\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1-\frac{1}{y}}}+1\right)}{2\,\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\sqrt{1+\frac{1}{y}}}{\sqrt{1-\frac{1}{y}}}\right)}{\frac{\sqrt{1+\frac{1}{y}}\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1-\frac{1}{y}}}+1}\right)$$

01.14.16.0218.01

$$\tan^{-1}(x) + i\coth^{-1}(y) = \tan^{-1}\left(\frac{i\,x\,y-1}{x+i\,y}\right) + \pi\left\lfloor\frac{-\arg(1-i\,x)-\arg\left(1+\frac{1}{y}\right)+\arg\left(1-\frac{i\,x}{y}\right)+\pi}{2\pi}\right\rfloor - \pi\left\lfloor\frac{-\arg(i\,x+1)-\arg\left(1-\frac{1}{y}\right)+\arg\left(1-\frac{i\,x}{y}\right)+\pi}{2\pi}\right\rfloor$$

Involving $\operatorname{csch}^{-1}(z)$

01.14.16.0219.01

$$\tan^{-1}(x) + \operatorname{csch}^{-1}(y) = \pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor - 2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)+\pi}{2\pi}\right\rfloor + \left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)\right)}{2\pi}\right\rfloor + \left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right) + \log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)\right)$$

01.14.16.0220.01

$$\tan^{-1}(x) + \operatorname{csch}^{-1}(y) = \pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor - 2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)+\pi}{2\pi}\right\rfloor + \left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)\right)}{2\pi}\right\rfloor + \left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right) + i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}+1\right)}{2\pi}+\frac{1}{2}\right\rfloor}\right) + 2\,i\tan^{-1}\left(\frac{i\left(1-\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)\right)}{\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}+1}\right)$$

01.14.16.0221.01

$$\tan^{-1}(x)+i\operatorname{csch}^{-1}(y)=-\frac{\sqrt{x^2+1}\sqrt{\frac{\left(x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}\right)^2}{x^2+1}}}{x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}}\sin^{-1}\left(\frac{\sqrt{1+\frac{1}{y^2}}-\frac{i\,x}{y}}{\sqrt{x^2+1}}\right)+$$

$$\pi\left(\frac{\sqrt{\frac{\left(x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}\right)^2}{x^2+1}}\sqrt{x^2+1}}{x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}}+1\right)\left\lfloor\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1+\frac{1}{y^2}}-\frac{1}{y}\right)}{2\pi}\right\rfloor-$$

$$\pi\left(\frac{\sqrt{x^2+1}\sqrt{\frac{\left(x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}\right)^2}{x^2+1}}}{x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}}-1\right)\left\lfloor-\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1+\frac{1}{y^2}}-\frac{1}{y}\right)-\pi}{2\pi}\right\rfloor+\frac{\pi\sqrt{\frac{\left(x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}\right)^2}{x^2+1}}\sqrt{x^2+1}}{2\left(x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}\right)}$$

01.14.16.0222.01

$$\tan^{-1}(x) + i\,\operatorname{csch}^{-1}(y) = \tan^{-1}\left(\frac{(-1)^{-\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{x\sqrt{1+\frac{1}{y^2}} + \frac{i}{y}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor} \sqrt{x^2+1}\,\sqrt{1 - \frac{\left(\sqrt{1+\frac{1}{y^2}} - \frac{i\,x}{y}\right)^2}{x^2+1}}}{\sqrt{1+\frac{1}{y^2}} - \frac{i\,x}{y}}\right) +$$

$$\frac{1}{2}\pi\left(2\left(1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{x\sqrt{1+\frac{1}{y^2}} + \frac{i}{y}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right)\left\lfloor \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right) + \arg\left(\sqrt{1+\frac{1}{y^2}} - \frac{1}{y}\right)}{2\pi} \right\rfloor + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{x\sqrt{1+\frac{1}{y^2}} + \frac{i}{y}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor} + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{x\sqrt{1+\frac{1}{y^2}} + \frac{i}{y}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right.$$

$$\left. e^{i\pi\left\lfloor -\frac{\arg\left(x^2+1\right)}{2\pi} + \frac{\arg\left(\frac{i\,x}{y} - \sqrt{1+\frac{1}{y^2}}\right)}{\pi} + \frac{1}{2} \right\rfloor} - 2\left(-1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{x\sqrt{1+\frac{1}{y^2}} + \frac{i}{y}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right)\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right) + \arg\left(\sqrt{1+\frac{1}{y^2}} - \frac{1}{y}\right)}{2\pi} \right\rfloor\right)$$

Involving $\operatorname{sech}^{-1}(z)$

01.14.16.0223.01

$$\tan^{-1}(x)+\operatorname{sech}^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)\right)}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)\right)$$

01.14.16.0224.01

$$\tan^{-1}(x)+\operatorname{sech}^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)\right)}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}+1\right)}{2\,\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)\right)}{\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}+1}\right)$$

01.14.16.0225.01

$$\tan^{-1}(x)+i\,\operatorname{sech}^{-1}(y)=-\tan^{-1}\left(\frac{(-1)^{-\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\frac{1}{y}-i\,x\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\sqrt{x^2+1}\,\sqrt{1-\frac{\left(i\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{x}{y}\right)^2}{x^2+1}}}{i\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{x}{y}}\right)+$$

$$\frac{1}{4}\left(1+(-1)^{-\left\lfloor -\frac{\arg\left(1-\frac{1}{y}\right)}{2\pi}\right\rfloor}\right)\pi\left(2\left(1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)}{2\pi}\right\rfloor+\right.$$

$$\left.(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}-2\left(-1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor\frac{1}{2}-\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)}{2\pi}\right\rfloor-1\right)-$$

$$\frac{1}{4}\left(1-(-1)^{-\left\lfloor -\frac{\arg\left(1-\frac{1}{y}\right)}{2\pi}\right\rfloor}\right)\pi\left(2\left(1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor \frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)}{2\pi}\right\rfloor+\right.$$

$$\left.(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}-2\left(-1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left(\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)}{2\pi}\right\rfloor-1\right)\right)+$$

$$\frac{1}{2}(-1)^{\left\lfloor -\frac{\arg\left(x^2+1\right)}{2\pi}+\frac{\arg\left(i\sqrt{\frac{1}{y}-1}\sqrt{1+\frac{1}{y}}+\frac{x}{y}\right)}{\pi}+\frac{1}{2}\right\rfloor+\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\frac{1}{y}-i\,x\sqrt{\frac{1}{y}-1}\sqrt{1+\frac{1}{y}}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\pi$$

Differences involving the direct function

Involving log(*z*)

01.14.16.0226.01

$$\tan^{-1}(x)-\log(y)=\pi\left\lfloor \frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor-$$

$$2\,i\,\pi\left(\left\lfloor \frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(\frac{1}{y}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor \frac{\operatorname{Im}(\log(y))+\pi}{2\pi}\right\rfloor+\left\lfloor \frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+\log\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{y}\right)$$

01.14.16.0227.01

$$\tan^{-1}(x)-\log(y)=$$

$$\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(\frac{1}{y}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\operatorname{Im}(\log(y))+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+$$

$$i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{y}+1\right)}{2\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{y}\right)}{\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{y}+1}\right)$$

Involving $\sin^{-1}(z)$

01.14.16.0228.01

$$\tan^{-1}(x)-\sin^{-1}(y)=$$

$$\frac{\sqrt{x^2+1}\sqrt{\frac{\left(y-x\sqrt{1-y^2}\right)^2}{x^2+1}}}{y-x\sqrt{1-y^2}}\sin^{-1}\left(\frac{x\,y+\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)-\pi\left(\frac{\sqrt{\frac{\left(y-x\sqrt{1-y^2}\right)^2}{x^2+1}}\sqrt{x^2+1}}{y-x\sqrt{1-y^2}}+1\right)\left\lfloor\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(i\,y+\sqrt{1-y^2}\right)}{2\pi}\right\rfloor+$$

$$\pi\left(\frac{\sqrt{x^2+1}\sqrt{\frac{\left(y-x\sqrt{1-y^2}\right)^2}{x^2+1}}}{y-x\sqrt{1-y^2}}-1\right)\left\lfloor-\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(i\,y+\sqrt{1-y^2}\right)-\pi}{2\pi}\right\rfloor-\frac{\pi\sqrt{x^2+1}\sqrt{\frac{\left(y-x\sqrt{1-y^2}\right)^2}{x^2+1}}}{2\left(y-x\sqrt{1-y^2}\right)}$$

01.14.16.0229.01

$$\tan^{-1}(x) - \sin^{-1}(y) = \tan^{-1}\left(\frac{(-1)^{-\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{y - x\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor} \sqrt{x^2+1}\, \sqrt{1 - \frac{\left(-x\,y - \sqrt{1-y^2}\right)^2}{x^2+1}}}{-x\,y - \sqrt{1-y^2}}\right) -$$

$$\frac{1}{2}\pi\left(2\left(1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{y - x\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right)\left\lfloor \frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right) + \arg\left(i\,y + \sqrt{1-y^2}\right)}{2\pi} \right\rfloor + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{y - x\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor} -\right.$$

$$(-1)^{\left\lfloor -\frac{\arg(x^2+1)}{2\pi} + \frac{\arg\left(x\,y + \sqrt{1-y^2}\right)}{\pi} + \frac{1}{2} \right\rfloor + \left\lfloor \frac{\arg(x^2+1)}{2\pi} + \frac{1}{2} - \frac{\arg\left(y - x\sqrt{1-y^2}\right)}{\pi} \right\rfloor - 2\left\lfloor \frac{\arg(x^2+1)}{4\pi} + \frac{1}{2} - \frac{\arg\left(y - x\sqrt{1-y^2}\right)}{2\pi} \right\rfloor} -$$

$$\left. 2\left(-1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{y - x\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right)\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right) + \arg\left(i\,y + \sqrt{1-y^2}\right)}{2\pi} \right\rfloor\right)$$

Involving $\cos^{-1}(z)$

01.14.16.0230.01

$$\tan^{-1}(x) - \cos^{-1}(y) = -\frac{\pi}{2} - \frac{\sqrt{x^2+1}\,\sqrt{\frac{\left(\sqrt{1-y^2}\,x+y\right)^2}{x^2+1}}}{\sqrt{1-y^2}\,x+y}\sin^{-1}\left(\frac{\sqrt{1-y^2}-x\,y}{\sqrt{x^2+1}}\right)+$$

$$\pi\left(\frac{\sqrt{\frac{\left(\sqrt{1-y^2}\,x+y\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{\sqrt{1-y^2}\,x+y}+1\right)\left\lfloor\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(i\,y+\sqrt{1-y^2}\right)}{2\,\pi}\right\rfloor-$$

$$\pi\left(\frac{\sqrt{x^2+1}\,\sqrt{\frac{\left(\sqrt{1-y^2}\,x+y\right)^2}{x^2+1}}}{\sqrt{1-y^2}\,x+y}-1\right)\left\lfloor-\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(i\,y+\sqrt{1-y^2}\right)-\pi}{2\,\pi}\right\rfloor+\frac{\pi\sqrt{\frac{\left(\sqrt{1-y^2}\,x+y\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{2\left(\sqrt{1-y^2}\,x+y\right)}$$

01.14.16.0231.01

$$\tan^{-1}(x) - \cos^{-1}(y) = \frac{1}{2}\pi\left(-1 + 2\left(1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{\sqrt{1-y^2}\; x+y}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right)\right)\left\lfloor \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right) + \arg\left(i\,y + \sqrt{1-y^2}\right)}{2\pi} \right\rfloor +$$

$$(-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{\sqrt{1-y^2}\; x+y}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor} + (-1)^{\left\lfloor \frac{-\arg\left(x^2+1\right)+2\arg\left(x\,y-\sqrt{1-y^2}\right)+\pi}{2\pi} \right\rfloor + \left\lfloor \frac{\arg\left(x^2+1\right)-2\arg\left(\sqrt{1-y^2}\; x+y\right)+\pi}{2\pi} \right\rfloor - 2\left\lfloor \frac{\arg\left(x^2+1\right)-2\arg\left(\sqrt{1-y^2}\; x+y\right)+2\pi}{4\pi} \right\rfloor} -$$

$$2\left(-1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{\sqrt{1-y^2}\; x+y}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right)\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right) + \arg\left(i\,y + \sqrt{1-y^2}\right)}{2\pi} \right\rfloor -$$

$$\tan^{-1}\left(\frac{(-1)^{-\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{\sqrt{1-y^2}\; x+y}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor} \sqrt{x^2+1}\, \sqrt{\frac{x^2-\left(x\,y-\sqrt{1-y^2}\right)^2+1}{x^2+1}}}{x\,y-\sqrt{1-y^2}}\right)$$

Involving $\cot^{-1}(z)$

01.14.16.0014.01

$$\tan^{-1}(x) - \cot^{-1}(y) = -\tan^{-1}\left(\frac{1-x\,y}{x+y}\right) - \frac{\pi}{2}\operatorname{sgn}(1-x\,y)\,(1-\operatorname{sgn}(x+y)) \;/;\; y > 0$$

01.14.16.0232.01

$$\tan^{-1}(x) - \cot^{-1}(y) =$$

$$-\tan^{-1}\left(\frac{1-x\,y}{x+y}\right) + \pi\left\lfloor \frac{-\arg(1-i\,x) - \arg\left(1+\frac{i}{y}\right) + \arg\left(\frac{x}{y}+1\right) + \pi}{2\pi} \right\rfloor - \pi\left\lfloor \frac{-\arg(i\,x+1) + \arg\left(\frac{x}{y}+1\right) - \arg\left(1-\frac{i}{y}\right) + \pi}{2\pi} \right\rfloor$$

01.14.16.0233.01

$$\tan^{-1}(x)-\cot^{-1}(y)=\frac{1}{2}\pi\left(\frac{\sqrt{y^2}}{y}+1\right)-\tan^{-1}\left(\frac{1-xy}{x+y}\right)+\pi\left\lfloor-\frac{\arg(iy+1)}{2\pi}\right\rfloor-\pi\left\lfloor-\frac{\arg(1-iy)}{2\pi}\right\rfloor-\pi\left\lfloor\frac{-2\arg(ix+1)+2\arg(x+y)-2\arg(iy+1)+3\pi}{4\pi}\right\rfloor+\pi\left\lfloor\frac{-2\arg(1-ix)+2\arg(x+y)-2\arg(1-iy)+\pi}{4\pi}\right\rfloor$$

01.14.16.0234.01

$$\tan^{-1}(x)-\cot^{-1}(y)=-\tan^{-1}\left(\frac{1-xy}{x+y}\right)+\pi\left\lfloor\frac{-\arg(1-ix)-\arg\left(1+\frac{i}{y}\right)+\arg\left(\frac{x}{y}+1\right)+\pi}{2\pi}\right\rfloor-\pi\left\lfloor\frac{-\arg(ix+1)+\arg\left(\frac{x}{y}+1\right)-\arg\left(1-\frac{i}{y}\right)+\pi}{2\pi}\right\rfloor$$

Involving $\csc^{-1}(z)$

01.14.16.0235.01

$$\tan^{-1}(x)-\csc^{-1}(y)=\frac{\sqrt{\frac{\left(\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}\right)^2}{x^2+1}}\sqrt{x^2+1}}{\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}}\sin^{-1}\left(\frac{\frac{x}{y}+\sqrt{1-\frac{1}{y^2}}}{\sqrt{x^2+1}}\right)-\pi\left(\frac{\sqrt{\frac{\left(\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}\right)^2}{x^2+1}}\sqrt{x^2+1}}{\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}}+1\right)\left\lfloor\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)}{2\pi}\right\rfloor+\pi\left(\frac{\sqrt{x^2+1}\sqrt{\frac{\left(\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}\right)^2}{x^2+1}}}{\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}}-1\right)\left\lfloor-\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)-\pi}{2\pi}\right\rfloor-\frac{\pi\sqrt{x^2+1}\sqrt{\frac{\left(\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}\right)^2}{x^2+1}}}{2\left(\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}\right)}$$

01.14.16.0236.01

$$\tan^{-1}(x)-\csc^{-1}(y)=\tan^{-1}\left(\frac{(-1)^{-\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{x\sqrt{1-\frac{1}{y^2}}-\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\sqrt{x^2+1}\sqrt{1-\frac{\left(\frac{x}{y}+\sqrt{1-\frac{1}{y^2}}\right)^2}{x^2+1}}}{\frac{x}{y}+\sqrt{1-\frac{1}{y^2}}}\right)+$$

$$\frac{1}{2}\pi\left(2\left(1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{x\sqrt{1-\frac{1}{y^2}}-\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}-\frac{i}{y}\right)}{2\pi}\right\rfloor+\right.$$

$$(-1)^{\left\lfloor -\frac{\arg(x^2+1)}{2\pi}+\frac{\arg\left(-\frac{x}{y}-\sqrt{1-\frac{1}{y^2}}\right)}{\pi}+\frac{1}{2}\right\rfloor+\left\lfloor\frac{\arg(x^2+1)}{2\pi}+\frac{1}{2}-\frac{\arg\left(x\sqrt{1-\frac{1}{y^2}}-\frac{1}{y}\right)}{\pi}\right\rfloor-2\left\lfloor\frac{\arg(x^2+1)}{4\pi}+\frac{1}{2}-\frac{\arg\left(x\sqrt{1-\frac{1}{y^2}}-\frac{1}{y}\right)}{2\pi}\right\rfloor}+$$

$$\left.(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{x\sqrt{1-\frac{1}{y^2}}-\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}-2\left(-1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{x\sqrt{1-\frac{1}{y^2}}-\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor\frac{1}{2}-\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}-\frac{i}{y}\right)}{2\pi}\right\rfloor\right)$$

Involving $\sec^{-1}(z)$

01.14.16.0237.01

$$\tan^{-1}(x)-\sec^{-1}(y)=-\frac{\pi}{2}-\frac{\sqrt{x^2+1}\,\sqrt{\frac{\left(\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}\right)^2}{x^2+1}}}{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}\sin^{-1}\!\left(\frac{\sqrt{1-\frac{1}{y^2}}-\frac{x}{y}}{\sqrt{x^2+1}}\right)+$$

$$\pi\left(\frac{\sqrt{\frac{\left(\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}+1\right)\left\lfloor\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)}{2\pi}\right\rfloor-$$

$$\pi\left(\frac{\sqrt{x^2+1}\,\sqrt{\frac{\left(\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}\right)^2}{x^2+1}}}{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}-1\right)\left\lfloor-\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)-\pi}{2\pi}\right\rfloor+\frac{\pi\sqrt{\frac{\left(\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{2\left(\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}\right)}$$

01.14.16.0238.01

$$\tan^{-1}(x)-\sec^{-1}(y)=\frac{1}{2}\pi\left(-1+2\left(1+(-1)^{\left\lfloor\frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\right)\left\lfloor\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)}{2\pi}\right\rfloor+$$

$$(-1)^{\left\lfloor-\frac{\arg(x^2+1)}{2\pi}+\frac{\arg\left(\frac{x}{y}-\sqrt{1-\frac{1}{y^2}}\right)}{\pi}+\frac{1}{2}\right\rfloor+\left\lfloor\frac{\arg(x^2+1)}{2\pi}+\frac{1}{2}-\frac{\arg\left(\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}\right)}{\pi}\right\rfloor-2\left\lfloor\frac{\arg(x^2+1)}{4\pi}+\frac{1}{2}-\frac{\arg\left(\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}\right)}{2\pi}\right\rfloor}+$$

$$(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}-2\left(-1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)}{2\pi}\right\rfloor\Bigg)-$$

$$\tan^{-1}\left(\frac{(-1)^{-\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\sqrt{1-\frac{1}{y^2}}\,x+\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\sqrt{x^2+1}\,\sqrt{1-\frac{\left(\frac{x}{y}-\sqrt{1-\frac{1}{y^2}}\right)^2}{x^2+1}}}{\frac{x}{y}-\sqrt{1-\frac{1}{y^2}}}\right)$$

Involving $\sinh^{-1}(z)$

01.14.16.0239.01

$$\tan^{-1}(x)-\sinh^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor-$$

$$2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(\frac{1}{y+\sqrt{y^2+1}}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\operatorname{Im}\left(\log\left(y+\sqrt{y^2+1}\right)\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+\log\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{y+\sqrt{y^2+1}}\right)$$

01.14.16.0240.01

$$\tan^{-1}(x)-\sinh^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-$$
$$2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(\frac{1}{y+\sqrt{y^2+1}}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\operatorname{Im}\left(\log\left(y+\sqrt{y^2+1}\right)\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+$$
$$i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{y+\sqrt{y^2+1}}+1\right)}{2\,\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{y+\sqrt{y^2+1}}\right)}{\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{y+\sqrt{y^2+1}}+1}\right)$$

01.14.16.0241.01

$$\tan^{-1}(x)-i\sinh^{-1}(y)=\frac{\sqrt{\frac{\left(i\,y-x\sqrt{y^2+1}\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{i\,y-x\sqrt{y^2+1}}\sin^{-1}\left(\frac{i\,x\,y+\sqrt{y^2+1}}{\sqrt{x^2+1}}\right)-$$
$$\pi\left(\frac{\sqrt{\frac{\left(i\,y-x\sqrt{y^2+1}\right)^2}{x^2+1}}\,\sqrt{x^2+1}}{i\,y-x\sqrt{y^2+1}}+1\right)\left\lfloor\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{y^2+1}-y\right)}{2\,\pi}\right\rfloor+$$
$$\pi\left(\frac{\sqrt{x^2+1}\,\sqrt{\frac{\left(i\,y-x\sqrt{y^2+1}\right)^2}{x^2+1}}}{i\,y-x\sqrt{y^2+1}}-1\right)\left\lfloor-\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{y^2+1}-y\right)-\pi}{2\,\pi}\right\rfloor-\frac{\pi\sqrt{x^2+1}\,\sqrt{\frac{\left(i\,y-x\sqrt{y^2+1}\right)^2}{x^2+1}}}{2\left(i\,y-x\sqrt{y^2+1}\right)}$$

01.14.16.0242.01

$$\tan^{-1}(x) - i\sinh^{-1}(y) = \tan^{-1}\left(\frac{(-1)^{-\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{x\sqrt{y^2+1}\, - i y}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor} \sqrt{x^2+1}\, \sqrt{1 - \frac{\left(i x y + \sqrt{y^2+1}\right)^2}{x^2+1}}}{i x y + \sqrt{y^2+1}}\right) +$$

$$\frac{1}{2}\pi\left(2\left(1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{x\sqrt{y^2+1}\, - i y}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right) + \arg\left(y + \sqrt{y^2+1}\right)}{2\pi}\right\rfloor + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{x\sqrt{y^2+1}\, - i y}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor} + \right.$$

$$(-1)^{\left\lfloor -\frac{\arg(x^2+1)}{2\pi} + \frac{\arg\left(-i x y - \sqrt{y^2+1}\right)}{\pi} + \frac{1}{2}\right\rfloor + \left\lfloor \frac{\arg(x^2+1)}{2\pi} + \frac{1}{2} - \frac{\arg\left(x\sqrt{y^2+1}\, - i y\right)}{\pi}\right\rfloor - 2\left\lfloor \frac{\arg(x^2+1)}{4\pi} + \frac{1}{2} - \frac{\arg\left(x\sqrt{y^2+1}\, - i y\right)}{2\pi}\right\rfloor} -$$

$$\left. 2\left(-1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{x\sqrt{y^2+1}\, - i y}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right) + \arg\left(y + \sqrt{y^2+1}\right)}{2\pi}\right\rfloor\right)$$

Involving $\cosh^{-1}(z)$

01.14.16.0243.01

$$\tan^{-1}(x) - \cosh^{-1}(y) = \pi\left\lfloor \frac{\arg(i x + 1) - \arg(1 - i x) + \pi}{2\pi}\right\rfloor -$$

$$2 i\pi\left(\left\lfloor \frac{-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{i/2}\right) - \arg\left(\frac{1}{y+\sqrt{y-1}\,\sqrt{y+1}}\right) + \pi}{2\pi}\right\rfloor + \left\lfloor \frac{\operatorname{Im}\left(\log\left(y + \sqrt{y-1}\,\sqrt{y+1}\right)\right) + \pi}{2\pi}\right\rfloor + \left\lfloor \frac{\pi - \frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i x}{i x+1}\right)\right)}{2\pi}\right\rfloor\right) +$$

$$\log\left(\frac{\left(\frac{1-i x}{i x+1}\right)^{i/2}}{y + \sqrt{y-1}\,\sqrt{y+1}}\right)$$

01.14.16.0244.01

$$\tan^{-1}(x)-\cosh^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-$$
$$2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(\frac{1}{y+\sqrt{y-1}\,\sqrt{y+1}}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\operatorname{Im}\left(\log\left(y+\sqrt{y-1}\,\sqrt{y+1}\right)\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+$$
$$i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{y+\sqrt{y-1}\,\sqrt{y+1}}+1\right)}{2\,\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{y+\sqrt{y-1}\,\sqrt{y+1}}\right)}{\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{y+\sqrt{y-1}\,\sqrt{y+1}}+1}\right)$$

01.14.16.0245.01

$$\tan^{-1}(x) - i\cosh^{-1}(y) = \tan^{-1}\left(\frac{(-1)^{-\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{i\sqrt{y-1}\,\sqrt{y+1}\,x + y}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor} \sqrt{x^2+1}\,\sqrt{1 - \frac{\left(-x\,y + i\sqrt{y-1}\,\sqrt{y+1}\right)^2}{x^2+1}}}{-x\,y + i\sqrt{y-1}\,\sqrt{y+1}}\right) +$$
$$\frac{1}{4}\left(1 - (-1)^{-\left\lfloor -\frac{\arg(1-y)}{2\pi} \right\rfloor}\right)\pi \left(2\left(1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{\sqrt{1-y^2}\,x + y}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right)\left\lfloor \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right) + \arg\left(i\,y + \sqrt{1-y^2}\right)}{2\pi} \right\rfloor +\right.$$
$$\left.(-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{\sqrt{1-y^2}\,x + y}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor} - 2\left(-1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{\sqrt{1-y^2}\,x + y}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right)\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right) + \arg\left(i\,y + \sqrt{1-y^2}\right)}{2\pi} \right\rfloor - 1\right) -$$
$$\frac{1}{4}\left(1 + (-1)^{-\left\lfloor -\frac{\arg(1-y)}{2\pi} \right\rfloor}\right)\pi \left(2\left(1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{y - x\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right)\left\lfloor \frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right) + \arg\left(i\,y + \sqrt{1-y^2}\right)}{2\pi} \right\rfloor +\right.$$
$$\left.(-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{y - x\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor} - 2\left(-1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{y - x\sqrt{1-y^2}}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\right)\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right) + \arg\left(i\,y + \sqrt{1-y^2}\right)}{2\pi} \right\rfloor - 1\right) -$$
$$\frac{1}{2}(-1)^{\left\lfloor -\frac{\arg\left(x^2+1\right)}{2\pi} + \frac{\arg\left(-x\,y + i\sqrt{y-1}\,\sqrt{y+1}\right)}{\pi} + \frac{1}{2} \right\rfloor + \left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{i\sqrt{y-1}\,\sqrt{y+1}\,x + y}{\sqrt{x^2+1}}\right)}{\pi} \right\rfloor}\pi$$

Involving $\tanh^{-1}(z)$

01.14.16.0246.01

$$\tan^{-1}(x)-\tanh^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{\frac{1}{2}\arg(y+1)-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\sqrt{1-y}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\frac{1}{2}\operatorname{Im}(\log(y+1))+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\sqrt{1-y}\right)\right)}{2\pi}\right\rfloor\right)-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\frac{1}{2}\arg(1-y)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Im}(\log(1-y))}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+\log\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\sqrt{1-y}}{\sqrt{y+1}}\right)$$

01.14.16.0247.01

$$\tan^{-1}(x)-\tanh^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{\frac{1}{2}\arg(y+1)-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\sqrt{1-y}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\frac{1}{2}\operatorname{Im}(\log(y+1))+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\sqrt{1-y}\right)\right)}{2\pi}\right\rfloor\right)-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\frac{1}{2}\arg(1-y)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Im}(\log(1-y))}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\frac{\sqrt{1-y}\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{y+1}}+1\right)}{2\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\sqrt{1-y}}{\sqrt{y+1}}\right)}{\frac{\sqrt{1-y}\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{y+1}}+1}\right)$$

01.14.16.0248.01

$$\tan^{-1}(x)-\tanh^{-1}(x)=\log\left(\left(\frac{i+x}{i-x}\right)^{i/2}\frac{\sqrt{1-x}}{\sqrt{1+x}}\right)\;/;\;i\,z\notin(-\infty,-1)$$

01.14.16.0249.01

$$\tan^{-1}(x)-i\tanh^{-1}(y)=\tan^{-1}\left(\frac{x-i\,y}{i\,x\,y+1}\right)+\pi\left\lfloor\frac{-\arg(1-i\,x)-\arg(1-y)+\arg(i\,x\,y+1)+\pi}{2\pi}\right\rfloor-\pi\left\lfloor\frac{-\arg(i\,x+1)-\arg(y+1)+\arg(i\,x\,y+1)+\pi}{2\pi}\right\rfloor$$

Involving $\coth^{-1}(z)$

01.14.16.0250.01

$$\tan^{-1}(x)-\coth^{-1}(y)=\pi\left\lfloor\frac{\arg(i x+1)-\arg(1-i x)+\pi}{2\pi}\right\rfloor-$$
$$2i\pi\left(\left\lfloor\frac{\frac{1}{2}\arg\left(1+\frac{1}{y}\right)-\arg\left(\left(\frac{1-ix}{ix+1}\right)^{i/2}\sqrt{1-\frac{1}{y}}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\frac{1}{2}\operatorname{Im}\left(\log\left(1+\frac{1}{y}\right)\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\left(\frac{1-ix}{ix+1}\right)^{i/2}\sqrt{1-\frac{1}{y}}\right)\right)}{2\pi}\right\rfloor\right)-$$
$$2i\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-ix}{ix+1}\right)^{i/2}\right)-\frac{1}{2}\arg\left(1-\frac{1}{y}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Im}\left(\log\left(1-\frac{1}{y}\right)\right)}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-ix}{ix+1}\right)\right)}{2\pi}\right\rfloor\right)+\log\left(\frac{\left(\frac{1-ix}{ix+1}\right)^{i/2}\sqrt{1-\frac{1}{y}}}{\sqrt{1+\frac{1}{y}}}\right)$$

01.14.16.0251.01

$$\tan^{-1}(x)-\coth^{-1}(y)=\pi\left\lfloor\frac{\arg(i x+1)-\arg(1-i x)+\pi}{2\pi}\right\rfloor-$$
$$2i\pi\left(\left\lfloor\frac{\frac{1}{2}\arg\left(1+\frac{1}{y}\right)-\arg\left(\left(\frac{1-ix}{ix+1}\right)^{i/2}\sqrt{1-\frac{1}{y}}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\frac{1}{2}\operatorname{Im}\left(\log\left(1+\frac{1}{y}\right)\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\left(\frac{1-ix}{ix+1}\right)^{i/2}\sqrt{1-\frac{1}{y}}\right)\right)}{2\pi}\right\rfloor\right)-$$
$$2i\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-ix}{ix+1}\right)^{i/2}\right)-\frac{1}{2}\arg\left(1-\frac{1}{y}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Im}\left(\log\left(1-\frac{1}{y}\right)\right)}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-ix}{ix+1}\right)\right)}{2\pi}\right\rfloor\right)+$$
$$i\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\frac{\sqrt{1-\frac{1}{y}}\left(\frac{1-ix}{ix+1}\right)^{i/2}}{\sqrt{1+\frac{1}{y}}}+1\right)}{2\pi}+\frac{1}{2}\right\rfloor}\right)+2i\tan^{-1}\left(\frac{i\left(1-\frac{\left(\frac{1-ix}{ix+1}\right)^{i/2}\sqrt{1-\frac{1}{y}}}{\sqrt{1+\frac{1}{y}}}\right)}{\frac{\sqrt{1-\frac{1}{y}}\left(\frac{1-ix}{ix+1}\right)^{i/2}}{\sqrt{1+\frac{1}{y}}}+1}\right)$$

01.14.16.0252.01

$$\tan^{-1}(x)-i\coth^{-1}(y)=$$
$$-\tan^{-1}\left(\frac{ixy+1}{x-iy}\right)-\pi\left\lfloor\frac{-\arg(ix+1)-\arg\left(1+\frac{1}{y}\right)+\arg\left(\frac{ix}{y}+1\right)+\pi}{2\pi}\right\rfloor+\pi\left\lfloor\frac{-\arg(1-ix)+\arg\left(\frac{ix}{y}+1\right)-\arg\left(1-\frac{1}{y}\right)+\pi}{2\pi}\right\rfloor$$

Involving $\operatorname{csch}^{-1}(z)$

01.14.16.0253.01

$$\tan^{-1}(x)-\operatorname{csch}^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(\frac{1}{\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\operatorname{Im}\left(\log\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+\log\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}}\right)$$

01.14.16.0254.01

$$\tan^{-1}(x)-\operatorname{csch}^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(\frac{1}{\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\operatorname{Im}\left(\log\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}}+1\right)}{2\,\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}}\right)}{\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}}+1}\right)$$

01.14.16.0255.01

$$\tan^{-1}(x) - i\,\text{csch}^{-1}(y) = \frac{\sqrt{\frac{\left(-x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}\right)^2}{x^2+1}}\sqrt{x^2+1}}{-x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}} \sin^{-1}\left(\frac{\frac{i\,x}{y}+\sqrt{1+\frac{1}{y^2}}}{\sqrt{x^2+1}}\right) -$$

$$\pi\left(\frac{\sqrt{\frac{\left(-x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}\right)^2}{x^2+1}}\sqrt{x^2+1}}{-x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}}+1\right)\left\lfloor\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1+\frac{1}{y^2}}-\frac{1}{y}\right)}{2\pi}\right\rfloor +$$

$$\pi\left(\frac{\sqrt{x^2+1}\sqrt{\frac{\left(-x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}\right)^2}{x^2+1}}}{-x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}}-1\right)\left\lfloor-\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1+\frac{1}{y^2}}-\frac{1}{y}\right)-\pi}{2\pi}\right\rfloor - \frac{\pi\sqrt{x^2+1}\sqrt{\frac{\left(-x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}\right)^2}{x^2+1}}}{2\left(-x\sqrt{1+\frac{1}{y^2}}+\frac{i}{y}\right)}$$

01.14.16.0256.01

$$\tan^{-1}(x) - i\,\mathrm{csch}^{-1}(y) = \tan^{-1}\left(\frac{(-1)^{-\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{x\sqrt{1+\frac{1}{y^2}} - \frac{i}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor} \sqrt{x^2+1}\,\sqrt{1 - \frac{\left(\frac{i\,x}{y} + \sqrt{1+\frac{1}{y^2}}\right)^2}{x^2+1}}}{\frac{i\,x}{y} + \sqrt{1+\frac{1}{y^2}}}\right) + \frac{1}{2}\pi$$

$$\left(2\left(1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{x\sqrt{1+\frac{1}{y^2}} - \frac{i}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right) + \arg\left(\sqrt{1+\frac{1}{y^2}} + \frac{1}{y}\right)}{2\pi}\right\rfloor + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{x\sqrt{1+\frac{1}{y^2}} - \frac{i}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor} e^{i\pi\left\lfloor -\frac{\arg(x^2+1)}{2\pi} + \frac{\arg\left(-\frac{i\,x}{y} - \sqrt{1+\frac{1}{y^2}}\right)}{\pi} + \frac{1}{2}\right\rfloor} + \right.$$

$$\left.(-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{x\sqrt{1+\frac{1}{y^2}} - \frac{i}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor} - 2\left(-1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{x\sqrt{1+\frac{1}{y^2}} - \frac{i}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}}\right) + \arg\left(\sqrt{1+\frac{1}{y^2}} + \frac{1}{y}\right)}{2\pi}\right\rfloor\right)$$

Involving $\mathrm{sech}^{-1}(z)$

01.14.16.0257.01

$$\tan^{-1}(x)-\operatorname{sech}^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(\frac{1}{\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\operatorname{Im}\left(\log\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+\log\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}}\right)$$

01.14.16.0258.01

$$\tan^{-1}(x)-\operatorname{sech}^{-1}(y)=\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}\right)-\arg\left(\frac{1}{\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\operatorname{Im}\left(\log\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}}+1\right)}{2\,\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}}\right)}{\frac{\left(\frac{1-i\,x}{i\,x+1}\right)^{i/2}}{\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}}+1}\right)$$

01.14.16.0259.01

$$\tan^{-1}(x) - i\,\text{sech}^{-1}(y) = \tan^{-1}\left(\frac{(-1)^{-\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{i \sqrt{\frac{1}{y}-1} \sqrt{1+\frac{1}{y}} x + \frac{1}{y}}{\sqrt{x^2+1}} \right)}{\pi} \right\rfloor} \sqrt{x^2+1} \sqrt{1 - \frac{\left(i \sqrt{\frac{1}{y}-1} \sqrt{1+\frac{1}{y}} - \frac{x}{y} \right)^2}{x^2+1}}}{i \sqrt{\frac{1}{y}-1} \sqrt{1+\frac{1}{y}} - \frac{x}{y}} \right) +$$

$$\frac{1}{4} \left(1 - (-1)^{-\left\lfloor -\frac{\arg\left(1-\frac{1}{y}\right)}{2\pi} \right\rfloor} \right) \pi \left(2 \left(1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{\sqrt{1-\frac{1}{y^2}} x + \frac{1}{y}}{\sqrt{x^2+1}} \right)}{\pi} \right\rfloor} \right) \left\lfloor \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}} \right) + \arg\left(\sqrt{1-\frac{1}{y^2}} + \frac{i}{y} \right)}{2\pi} \right\rfloor + \right.$$

$$\left. (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{\sqrt{1-\frac{1}{y^2}} x + \frac{1}{y}}{\sqrt{x^2+1}} \right)}{\pi} \right\rfloor} - 2 \left(-1 + (-1)^{\left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{\sqrt{1-\frac{1}{y^2}} x + \frac{1}{y}}{\sqrt{x^2+1}} \right)}{\pi} \right\rfloor} \right) \left\lfloor \frac{1}{2} - \frac{\arg\left(\frac{i-x}{\sqrt{x^2+1}} \right) + \arg\left(\sqrt{1-\frac{1}{y^2}} + \frac{i}{y} \right)}{2\pi} \right\rfloor - 1 \right) -$$

$$\frac{1}{4}\left(1+(-1)^{-\left\lfloor -\frac{\arg\left(1-\frac{1}{y}\right)}{2\pi}\right\rfloor}\right)\pi\left(2\left(1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor \frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)}{2\pi}\right\rfloor+\right.$$

$$\left.(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}-2\left(-1+(-1)^{\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{\frac{1}{y}-x\sqrt{1-\frac{1}{y^2}}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\right)\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{i+x}{\sqrt{x^2+1}}\right)+\arg\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)}{2\pi}\right\rfloor-1\right)-$$

$$\frac{1}{2}(-1)^{\left\lfloor -\frac{\arg\left(x^2+1\right)}{2\pi}+\frac{\arg\left(i\sqrt{\frac{1}{y}-1}\sqrt{1+\frac{1}{y}}-\frac{x}{y}\right)}{\pi}+\frac{1}{2}\right\rfloor+\left\lfloor \frac{1}{2}-\frac{\arg\left(\frac{i\sqrt{\frac{1}{y}-1}\sqrt{1+\frac{1}{y}}\,x+\frac{1}{y}}{\sqrt{x^2+1}}\right)}{\pi}\right\rfloor}\pi$$

Linear combinations involving the direct function

Involving log(*z*)

01.14.16.0260.01

$$a\tan^{-1}(x)+b\log(y)=a\pi\left\lfloor \frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor-$$

$$2\,i\,\pi\left(\left\lfloor \frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\right)-\arg\left(y^b\right)+\pi}{2\pi}\right\rfloor+\left\lfloor \frac{\pi-\operatorname{Im}(b\log(y))}{2\pi}\right\rfloor+\left\lfloor \frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}y^b\right)$$

01.14.16.0261.01

$$a \tan^{-1}(x) + b \log(y) = a\pi \left\lfloor \frac{\arg(i x + 1) - \arg(1 - i x) + \pi}{2\pi} \right\rfloor - 2 i \pi \left(\left\lfloor \frac{-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\right) - \arg\left(y^b\right) + \pi}{2\pi} \right\rfloor + \left\lfloor \frac{\pi - \operatorname{Im}(b \log(y))}{2\pi} \right\rfloor + \left\lfloor \frac{\pi - \frac{1}{2} \operatorname{Re}\left(a \log\left(\frac{1-i x}{i x+1}\right)\right)}{2\pi} \right\rfloor \right) + i\pi \left(1 - (-1)^{\left\lfloor \frac{\arg\left(y^b \left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}} + 1\right)}{2\pi} + \frac{1}{2} \right\rfloor} \right) + 2 i \tan^{-1}\left(\frac{i \left(1 - \left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}} y^b\right)}{y^b \left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}} + 1} \right)$$

Involving $\sin^{-1}(z)$

01.14.16.0262.01

$$a \tan^{-1}(x) + b \sin^{-1}(y) = -\pi \left\lfloor \frac{\arg(i x + 1) - \arg(1 - i x) + \pi}{2\pi} \right\rfloor a + \frac{\pi a}{2} - 2 i \pi \left(\left\lfloor \frac{-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\right) - \arg\left(\left(i y + \sqrt{1-y^2}\right)^{-i b}\right) + \pi}{2\pi} \right\rfloor + \left\lfloor \frac{\operatorname{Re}\left(b \log\left(i y + \sqrt{1-y^2}\right)\right) + \pi}{2\pi} \right\rfloor + \left\lfloor \frac{\pi - \frac{1}{2} \operatorname{Re}\left(a \log\left(\frac{1-i x}{i x+1}\right)\right)}{2\pi} \right\rfloor \right) + \log\left(\left(\frac{1 - i x}{i x + 1}\right)^{\frac{i a}{2}} \left(i y + \sqrt{1-y^2}\right)^{-i b} \right)$$

01.14.16.0263.01

$$a \tan^{-1}(x) + b \sin^{-1}(y) = -\pi \left\lfloor \frac{\arg(i x + 1) - \arg(1 - i x) + \pi}{2\pi} \right\rfloor a + \frac{\pi a}{2} - 2 i \pi \left(\left\lfloor \frac{-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\right) - \arg\left(\left(i y + \sqrt{1-y^2}\right)^{-i b}\right) + \pi}{2\pi} \right\rfloor + \left\lfloor \frac{\operatorname{Re}\left(b \log\left(i y + \sqrt{1-y^2}\right)\right) + \pi}{2\pi} \right\rfloor + \left\lfloor \frac{\pi - \frac{1}{2} \operatorname{Re}\left(a \log\left(\frac{1-i x}{i x+1}\right)\right)}{2\pi} \right\rfloor \right) + i\pi \left(1 - (-1)^{\left\lfloor \frac{\arg\left(\left(i y + \sqrt{1-y^2}\right)^{-i b} \left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}} + 1\right)}{2\pi} + \frac{1}{2} \right\rfloor} \right) + 2 i \tan^{-1}\left(\frac{i \left(1 - \left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}} \left(i y + \sqrt{1-y^2}\right)^{-i b}\right)}{\left(i y + \sqrt{1-y^2}\right)^{-i b} \left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}} + 1} \right)$$

Involving $\cos^{-1}(z)$

01.14.16.0264.01

$$a\tan^{-1}(x)+b\cos^{-1}(y)=\frac{\pi b}{2}+a\pi\left\lfloor\frac{\arg(i x+1)-\arg(1-i x)+\pi}{2\pi}\right\rfloor-2 i\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\right)-\arg\left(\left(i y+\sqrt{1-y^2}\right)^{i b}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i x}{i x+1}\right)\right)}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Re}\left(b\log\left(i y+\sqrt{1-y^2}\right)\right)}{2\pi}\right\rfloor\right)+\log\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\left(i y+\sqrt{1-y^2}\right)^{i b}\right)$$

01.14.16.0265.01

$$a\tan^{-1}(x)+b\cos^{-1}(y)=\frac{\pi b}{2}+a\pi\left\lfloor\frac{\arg(i x+1)-\arg(1-i x)+\pi}{2\pi}\right\rfloor-2 i\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\right)-\arg\left(\left(i y+\sqrt{1-y^2}\right)^{i b}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i x}{i x+1}\right)\right)}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Re}\left(b\log\left(i y+\sqrt{1-y^2}\right)\right)}{2\pi}\right\rfloor\right)+i\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\left(i y+\sqrt{1-y^2}\right)^{i b}\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}+1\right)}{2\pi}+\frac{1}{2}\right\rfloor}\right)+2 i\tan^{-1}\left(\frac{i\left(1-\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\left(i y+\sqrt{1-y^2}\right)^{i b}\right)}{\left(i y+\sqrt{1-y^2}\right)^{i b}\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}+1}\right)$$

Involving $\cot^{-1}(z)$

01.14.16.0266.01

$$a\tan^{-1}(x)+b\cot^{-1}(y)=a\pi\left\lfloor\frac{\arg(i x+1)-\arg(1-i x)+\pi}{2\pi}\right\rfloor-2 i\pi\left(\left\lfloor\frac{-\arg\left(\left(1+\frac{i}{y}\right)^{-\frac{1}{2}(i b)}\right)-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\left(1-\frac{i}{y}\right)^{\frac{i b}{2}}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\frac{1}{2}\operatorname{Re}\left(b\log\left(1+\frac{i}{y}\right)\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\left(1-\frac{i}{y}\right)^{\frac{i b}{2}}\right)\right)}{2\pi}\right\rfloor\right)-2 i\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\right)-\arg\left(\left(1-\frac{i}{y}\right)^{\frac{i b}{2}}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i x}{i x+1}\right)\right)}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(b\log\left(1-\frac{i}{y}\right)\right)}{2\pi}\right\rfloor\right)+\log\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\left(1-\frac{i}{y}\right)^{\frac{i b}{2}}\left(1+\frac{i}{y}\right)^{-\frac{1}{2}(i b)}\right)$$

01.14.16.0267.01

$$a\tan^{-1}(x)+b\cot^{-1}(y)=a\,\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-$$

$$2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(1+\frac{i}{y}\right)^{-\frac{1}{2}(i\,b)}\right)-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\left(1-\frac{i}{y}\right)^{\frac{i\,b}{2}}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\frac{1}{2}\operatorname{Re}\left(b\log\left(1+\frac{i}{y}\right)\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\left(1-\frac{i}{y}\right)^{\frac{i\,b}{2}}\right)\right)}{2\,\pi}\right\rfloor\right)-$$

$$2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\right)-\arg\left(\left(1-\frac{i}{y}\right)^{\frac{i\,b}{2}}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(b\log\left(1-\frac{i}{y}\right)\right)}{2\,\pi}\right\rfloor\right)+$$

$$i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\left(1+\frac{i}{y}\right)^{-\frac{1}{2}(i\,b)}\left(1-\frac{i}{y}\right)^{\frac{i\,b}{2}}\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}+1\right)}{2\,\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\left(1-\frac{i}{y}\right)^{\frac{i\,b}{2}}\left(1+\frac{i}{y}\right)^{-\frac{1}{2}(i\,b)}\right)}{\left(1+\frac{i}{y}\right)^{-\frac{1}{2}(i\,b)}\left(1-\frac{i}{y}\right)^{\frac{i\,b}{2}}\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}+1}\right)$$

Involving $\csc^{-1}(z)$

01.14.16.0268.01

$$a\tan^{-1}(x)+b\csc^{-1}(y)=-\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor a+\frac{\pi\,a}{2}-$$

$$2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\right)-\arg\left(\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)^{-i\,b}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\operatorname{Re}\left(b\log\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+$$

$$\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)^{-i\,b}\right)$$

01.14.16.0269.01

$$a \tan^{-1}(x) + b \csc^{-1}(y) = -\pi \left\lfloor \frac{\arg(i\, x + 1) - \arg(1 - i\, x) + \pi}{2\pi} \right\rfloor a + \frac{\pi\, a}{2} - 2\, i\, \pi \left(\left\lfloor \frac{-\arg\left(\left(\frac{1 - i\, x}{i\, x + 1}\right)^{\frac{i\, a}{2}}\right) - \arg\left(\left(\sqrt{1 - \frac{1}{y^2}} + \frac{i}{y}\right)^{-i\, b}\right) + \pi}{2\pi} \right\rfloor + \left\lfloor \frac{\operatorname{Re}\left(b \log\left(\sqrt{1 - \frac{1}{y^2}} + \frac{i}{y}\right)\right) + \pi}{2\pi} \right\rfloor + \left\lfloor \frac{\pi - \frac{1}{2} \operatorname{Re}\left(a \log\left(\frac{1 - i\, x}{i\, x + 1}\right)\right)}{2\pi} \right\rfloor \right) + i\, \pi \left(1 - (-1)^{\left\lfloor \frac{\arg\left(\left(\sqrt{1 - \frac{1}{y^2}} + \frac{i}{y}\right)^{-i\, b} \left(\frac{1 - i\, x}{i\, x + 1}\right)^{\frac{i\, a}{2}} + 1\right)}{2\pi} + \frac{1}{2} \right\rfloor} \right) + 2\, i \tan^{-1}\left(\frac{i \left(1 - \left(\frac{1 - i\, x}{i\, x + 1}\right)^{\frac{i\, a}{2}} \left(\sqrt{1 - \frac{1}{y^2}} + \frac{i}{y}\right)^{-i\, b}\right)}{\left(\sqrt{1 - \frac{1}{y^2}} + \frac{i}{y}\right)^{-i\, b} \left(\frac{1 - i\, x}{i\, x + 1}\right)^{\frac{i\, a}{2}} + 1} \right)$$

Involving $\sec^{-1}(z)$

01.14.16.0270.01

$$a \tan^{-1}(x) + b \sec^{-1}(y) = \frac{\pi\, b}{2} + a\, \pi \left\lfloor \frac{\arg(i\, x + 1) - \arg(1 - i\, x) + \pi}{2\pi} \right\rfloor - 2\, i\, \pi \left(\left\lfloor \frac{-\arg\left(\left(\frac{1 - i\, x}{i\, x + 1}\right)^{\frac{i\, a}{2}}\right) - \arg\left(\left(\sqrt{1 - \frac{1}{y^2}} + \frac{i}{y}\right)^{i\, b}\right) + \pi}{2\pi} \right\rfloor + \left\lfloor \frac{\pi - \frac{1}{2} \operatorname{Re}\left(a \log\left(\frac{1 - i\, x}{i\, x + 1}\right)\right)}{2\pi} \right\rfloor + \left\lfloor \frac{\pi - \operatorname{Re}\left(b \log\left(\sqrt{1 - \frac{1}{y^2}} + \frac{i}{y}\right)\right)}{2\pi} \right\rfloor \right) + \log\left(\left(\frac{1 - i\, x}{i\, x + 1}\right)^{\frac{i\, a}{2}} \left(\sqrt{1 - \frac{1}{y^2}} + \frac{i}{y}\right)^{i\, b} \right)$$

01.14.16.0271.01

$$a\tan^{-1}(x)+b\sec^{-1}(y)=\frac{\pi b}{2}+a\pi\left\lfloor\frac{\arg(i x+1)-\arg(1-i x)+\pi}{2\pi}\right\rfloor-$$
$$2 i\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\right)-\arg\left(\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)^{i b}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i x}{i x+1}\right)\right)}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Re}\left(b\log\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)\right)}{2\pi}\right\rfloor\right)+$$
$$i\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)^{i b}\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}+1\right)}{2\pi}+\frac{1}{2}\right\rfloor}\right)+2 i\tan^{-1}\left(\frac{i\left(1-\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)^{i b}\right)}{\left(\sqrt{1-\frac{1}{y^2}}+\frac{i}{y}\right)^{i b}\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}+1}\right)$$

Involving $\sinh^{-1}(z)$

01.14.16.0272.01

$$a\tan^{-1}(x)+b\sinh^{-1}(y)=a\pi\left\lfloor\frac{\arg(i x+1)-\arg(1-i x)+\pi}{2\pi}\right\rfloor-$$
$$2 i\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\right)-\arg\left(\left(y+\sqrt{y^2+1}\right)^{b}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(b\log\left(y+\sqrt{y^2+1}\right)\right)}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i x}{i x+1}\right)\right)}{2\pi}\right\rfloor\right)+$$
$$\log\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\left(y+\sqrt{y^2+1}\right)^{b}\right)$$

01.14.16.0273.01

$$a\tan^{-1}(x)+b\sinh^{-1}(y)=a\pi\left\lfloor\frac{\arg(i x+1)-\arg(1-i x)+\pi}{2\pi}\right\rfloor-$$
$$2 i\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\right)-\arg\left(\left(y+\sqrt{y^2+1}\right)^{b}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(b\log\left(y+\sqrt{y^2+1}\right)\right)}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i x}{i x+1}\right)\right)}{2\pi}\right\rfloor\right)+$$
$$i\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\left(y+\sqrt{y^2+1}\right)^{b}\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}+1\right)}{2\pi}+\frac{1}{2}\right\rfloor}\right)+2 i\tan^{-1}\left(\frac{i\left(1-\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}\left(y+\sqrt{y^2+1}\right)^{b}\right)}{\left(y+\sqrt{y^2+1}\right)^{b}\left(\frac{1-i x}{i x+1}\right)^{\frac{i a}{2}}+1}\right)$$

Involving $\cosh^{-1}(z)$

01.14.16.0274.01

$$a\tan^{-1}(x)+b\cosh^{-1}(y)=a\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\right)-\arg\left(\left(y+\sqrt{y-1}\,\sqrt{y+1}\right)^{b}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(b\log\left(y+\sqrt{y-1}\,\sqrt{y+1}\right)\right)}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\left(y+\sqrt{y-1}\,\sqrt{y+1}\right)^{b}\right)$$

01.14.16.0275.01

$$a\tan^{-1}(x)+b\cosh^{-1}(y)=a\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\right)-\arg\left(\left(y+\sqrt{y-1}\,\sqrt{y+1}\right)^{b}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(b\log\left(y+\sqrt{y-1}\,\sqrt{y+1}\right)\right)}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\left(y+\sqrt{y-1}\,\sqrt{y+1}\right)^{b}\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}+1\right)}{2\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\left(y+\sqrt{y-1}\,\sqrt{y+1}\right)^{b}\right)}{\left(y+\sqrt{y-1}\,\sqrt{y+1}\right)^{b}\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}+1}\right)$$

Involving $\tanh^{-1}(z)$

01.14.16.0276.01

$$a\tan^{-1}(x)+b\tanh^{-1}(y)=a\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left((y+1)^{b/2}\right)-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}(1-y)^{-\frac{b}{2}}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Im}(b\log(y+1))}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}(1-y)^{-\frac{b}{2}}\right)\right)}{2\pi}\right\rfloor\right)-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\right)-\arg\left((1-y)^{-\frac{b}{2}}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\frac{1}{2}\operatorname{Im}(b\log(1-y))+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}(1-y)^{-\frac{b}{2}}(y+1)^{b/2}\right)$$

01.14.16.0277.01

$$a\tan^{-1}(x)+b\tanh^{-1}(y)=a\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left((y+1)^{b/2}\right)-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}(1-y)^{-\frac{b}{2}}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Im}(b\log(y+1))}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}(1-y)^{-\frac{b}{2}}\right)\right)}{2\pi}\right\rfloor\right)-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\right)-\arg\left((1-y)^{-\frac{b}{2}}\right)+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\frac{1}{2}\operatorname{Im}(b\log(1-y))+\pi}{2\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\pi}\right\rfloor\right)+i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left((y+1)^{b/2}(1-y)^{-\frac{b}{2}}\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}+1\right)}{2\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}(1-y)^{-\frac{b}{2}}(y+1)^{b/2}\right)}{(y+1)^{b/2}(1-y)^{-\frac{b}{2}}\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}+1}\right)$$

Involving $\coth^{-1}(z)$

01.14.16.0278.01

$$a \tan^{-1}(x) + b \coth^{-1}(y) = a \pi \left\lfloor \frac{\arg(i x + 1) - \arg(1 - i x) + \pi}{2 \pi} \right\rfloor -$$
$$2 i \pi \left(\left\lfloor \frac{-\arg\left(\left(1 + \frac{1}{y}\right)^{b/2}\right) - \arg\left(\left(\frac{1 - i x}{i x + 1}\right)^{\frac{i a}{2}} \left(1 - \frac{1}{y}\right)^{-\frac{b}{2}}\right) + \pi}{2 \pi} \right\rfloor + \left\lfloor \frac{\pi - \frac{1}{2} \operatorname{Im}\left(b \log\left(1 + \frac{1}{y}\right)\right)}{2 \pi} \right\rfloor + \left\lfloor \frac{\pi - \operatorname{Im}\left(\log\left(\left(\frac{1 - i x}{i x + 1}\right)^{\frac{i a}{2}} \left(1 - \frac{1}{y}\right)^{-\frac{b}{2}}\right)\right)}{2 \pi} \right\rfloor \right) -$$
$$2 i \pi \left(\left\lfloor \frac{-\arg\left(\left(\frac{1 - i x}{i x + 1}\right)^{\frac{i a}{2}}\right) - \arg\left(\left(1 - \frac{1}{y}\right)^{-\frac{b}{2}}\right) + \pi}{2 \pi} \right\rfloor + \left\lfloor \frac{\frac{1}{2} \operatorname{Im}\left(b \log\left(1 - \frac{1}{y}\right)\right) + \pi}{2 \pi} \right\rfloor + \left\lfloor \frac{\pi - \frac{1}{2} \operatorname{Re}\left(a \log\left(\frac{1 - i x}{i x + 1}\right)\right)}{2 \pi} \right\rfloor \right) +$$
$$\log\left(\left(\frac{1 - i x}{i x + 1}\right)^{\frac{i a}{2}} \left(1 - \frac{1}{y}\right)^{-\frac{b}{2}} \left(1 + \frac{1}{y}\right)^{b/2} \right)$$

01.14.16.0279.01

$$a \tan^{-1}(x) + b \coth^{-1}(y) = a \pi \left\lfloor \frac{\arg(i x + 1) - \arg(1 - i x) + \pi}{2 \pi} \right\rfloor -$$
$$2 i \pi \left(\left\lfloor \frac{-\arg\left(\left(1 + \frac{1}{y}\right)^{b/2}\right) - \arg\left(\left(\frac{1 - i x}{i x + 1}\right)^{\frac{i a}{2}} \left(1 - \frac{1}{y}\right)^{-\frac{b}{2}}\right) + \pi}{2 \pi} \right\rfloor + \left\lfloor \frac{\pi - \frac{1}{2} \operatorname{Im}\left(b \log\left(1 + \frac{1}{y}\right)\right)}{2 \pi} \right\rfloor + \left\lfloor \frac{\pi - \operatorname{Im}\left(\log\left(\left(\frac{1 - i x}{i x + 1}\right)^{\frac{i a}{2}} \left(1 - \frac{1}{y}\right)^{-\frac{b}{2}}\right)\right)}{2 \pi} \right\rfloor \right) -$$
$$2 i \pi \left(\left\lfloor \frac{-\arg\left(\left(\frac{1 - i x}{i x + 1}\right)^{\frac{i a}{2}}\right) - \arg\left(\left(1 - \frac{1}{y}\right)^{-\frac{b}{2}}\right) + \pi}{2 \pi} \right\rfloor + \left\lfloor \frac{\frac{1}{2} \operatorname{Im}\left(b \log\left(1 - \frac{1}{y}\right)\right) + \pi}{2 \pi} \right\rfloor + \left\lfloor \frac{\pi - \frac{1}{2} \operatorname{Re}\left(a \log\left(\frac{1 - i x}{i x + 1}\right)\right)}{2 \pi} \right\rfloor \right) +$$
$$i \pi \left(1 - (-1)^{\left\lfloor \frac{\arg\left(\left(1 + \frac{1}{y}\right)^{b/2} \left(1 - \frac{1}{y}\right)^{-\frac{b}{2}} \left(\frac{1 - i x}{i x + 1}\right)^{\frac{i a}{2}} + 1\right)}{2 \pi} + \frac{1}{2} \right\rfloor} \right) + 2 i \tan^{-1}\left(\frac{i \left(1 - \left(\frac{1 - i x}{i x + 1}\right)^{\frac{i a}{2}} \left(1 - \frac{1}{y}\right)^{-\frac{b}{2}} \left(1 + \frac{1}{y}\right)^{b/2}\right)}{\left(1 + \frac{1}{y}\right)^{b/2} \left(1 - \frac{1}{y}\right)^{-\frac{b}{2}} \left(\frac{1 - i x}{i x + 1}\right)^{\frac{i a}{2}} + 1} \right)$$

Involving $\operatorname{csch}^{-1}(z)$

01.14.16.0280.01

$$a\tan^{-1}(x)+b\operatorname{csch}^{-1}(y)=a\,\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\right)-\arg\left(\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)^b\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(b\log\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)\right)}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)^b\right)$$

01.14.16.0281.01

$$a\tan^{-1}(x)+b\operatorname{csch}^{-1}(y)=a\,\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\right)-\arg\left(\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)^b\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(b\log\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)\right)}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)^b\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}+1\right)}{2\,\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)^b\right)}{\left(\sqrt{1+\frac{1}{y^2}}+\frac{1}{y}\right)^b\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}+1}\right)$$

Involving $\operatorname{sech}^{-1}(z)$

01.14.16.0282.01

$$a\tan^{-1}(x)+b\,\operatorname{sech}^{-1}(y)=a\,\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\right)-\arg\left(\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)^{b}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(b\log\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)\right)}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+\log\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)^{b}\right)$$

01.14.16.0283.01

$$a\tan^{-1}(x)+b\,\operatorname{sech}^{-1}(y)=a\,\pi\left\lfloor\frac{\arg(i\,x+1)-\arg(1-i\,x)+\pi}{2\,\pi}\right\rfloor-2\,i\,\pi\left(\left\lfloor\frac{-\arg\left(\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\right)-\arg\left(\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)^{b}\right)+\pi}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\operatorname{Im}\left(b\log\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)\right)}{2\,\pi}\right\rfloor+\left\lfloor\frac{\pi-\frac{1}{2}\operatorname{Re}\left(a\log\left(\frac{1-i\,x}{i\,x+1}\right)\right)}{2\,\pi}\right\rfloor\right)+i\,\pi\left(1-(-1)^{\left\lfloor\frac{\arg\left(\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)^{b}\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}+1\right)}{2\,\pi}+\frac{1}{2}\right\rfloor}\right)+2\,i\tan^{-1}\left(\frac{i\left(1-\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)^{b}\right)}{\left(\sqrt{\frac{1}{y}-1}\,\sqrt{1+\frac{1}{y}}+\frac{1}{y}\right)^{b}\left(\frac{1-i\,x}{i\,x+1}\right)^{\frac{i\,a}{2}}+1}\right)$$

Identities

Functional identities

01.14.17.0001.01

$$\tan(w(z_1)+w(z_2))=\frac{z_1+z_2}{1-z_1\,z_2}\;/;\;w(z)=\tan^{-1}(z)$$

Complex characteristics

Real part

01.14.19.0001.01

$$\operatorname{Re}\left(\tan^{-1}(x+i\,y)\right) = \frac{1}{2}\left(\tan^{-1}\left(\frac{2\,x}{1-x^2-y^2}\right) + \frac{\pi}{2}\left(\operatorname{sgn}\left(x^2+y^2-1\right)+1\right)\operatorname{sgn}(x)\right)$$

01.14.19.0002.01

$$\operatorname{Re}\left(\tan^{-1}(x+i\,y)\right) = \frac{1}{2}\left(\tan^{-1}(1-y,\,x) - \tan^{-1}(y+1,\,-x)\right)$$

Imaginary part

01.14.19.0003.01

$$\operatorname{Im}\left(\tan^{-1}(x+i\,y)\right) = \frac{1}{4}\log\left(\frac{(y+1)^2+x^2}{x^2+(1-y)^2}\right)$$

01.14.19.0004.01

$$\operatorname{Im}\left(\tan^{-1}(x+i\,y)\right) = \frac{1}{4}\left(\log\left(x^2+(y+1)^2\right) - \log\left(x^2+(y-1)^2\right)\right)$$

Absolute value

01.14.19.0005.01

$$\left|\tan^{-1}(x+i\,y)\right| = \frac{1}{2}\sqrt{\left(\tan^{-1}(1-y,\,x)-\tan^{-1}(y+1,\,-x)\right)^2 + \frac{1}{4}\left(\log\left(x^2+(y-1)^2\right)-\log\left(x^2+(y+1)^2\right)\right)^2}$$

Argument

01.14.19.0006.01

$$\arg\left(\tan^{-1}(x+i\,y)\right) = \tan^{-1}\left(2\left(\tan^{-1}(1-y,\,x)-\tan^{-1}(y+1,\,-x)\right),\,\log\left(x^2+(y+1)^2\right)-\log\left(x^2+(y-1)^2\right)\right)$$

Conjugate value

01.14.19.0007.01

$$\overline{\tan^{-1}(x+i\,y)} = \frac{1}{4}\left(2\tan^{-1}(1-y,\,x)-2\tan^{-1}(y+1,\,-x)+i\left(\log\left(x^2+(y-1)^2\right)-\log\left(x^2+(y+1)^2\right)\right)\right)$$

Signum value

01.14.19.0008.01

$$\operatorname{sgn}\left(\tan^{-1}(x+i\,y)\right) = \frac{\tan^{-1}(1-y,\,x)-\tan^{-1}(y+1,\,-x)-\frac{1}{2}\,i\left(\log\left(x^2+(y-1)^2\right)-\log\left(x^2+(y+1)^2\right)\right)}{\sqrt{\left(\tan^{-1}(1-y,\,x)-\tan^{-1}(y+1,\,-x)\right)^2+\frac{1}{4}\left(\log\left(x^2+(y-1)^2\right)-\log\left(x^2+(y+1)^2\right)\right)^2}}$$

Differentiation

Low-order differentiation

01.14.20.0001.01

$$\frac{\partial\tan^{-1}(z)}{\partial z} = \frac{1}{z^2+1}$$

01.14.20.0002.01

$$\frac{\partial^2 \tan^{-1}(z)}{\partial z^2} == -\frac{2z}{(z^2+1)^2}$$

Symbolic differentiation

01.14.20.0005.01

$$\frac{\partial^n \tan^{-1}(z)}{\partial z^n} == \tan^{-1}(z)\,\delta_n + \sum_{k=0}^{n-1} \frac{(-1)^k\, k!\,(2k-n+2)_{2(n-k)-2}\,(z^2+1)^{-k-1}}{(n-k-1)!\,(2z)^{n-2k-1}} \;/;\; n \in \mathbb{N}$$

01.14.20.0006.01

$$\frac{\partial^n \tan^{-1}(z)}{\partial z^n} == \frac{i\,(-1)^n\,(n-1)!}{2}\left((z-i)^{-n} - (z+i)^{-n}\right) \;/;\; n \in \mathbb{N}^+$$

01.14.20.0007.01

$$\frac{\partial^n \tan^{-1}(z)}{\partial z^n} == -\frac{(n-1)!}{(z^2+1)^n} \sum_{k=0}^{n} \binom{n}{k} \cos\left(\frac{1}{2}\pi\,(k+n+1)\right) z^k \;/;\; n \in \mathbb{N}^+$$

01.14.20.0003.02

$$\frac{\partial^n \tan^{-1}(z)}{\partial z^n} == 2^{n-1}\sqrt{\pi}\; z^{1-n}\; {}_3\tilde{F}_2\left(\frac{1}{2}, 1, 1;\; 1-\frac{n}{2}, \frac{3-n}{2};\; -z^2\right) \;/;\; n \in \mathbb{N}$$

01.14.20.0008.01

$$\frac{\partial^{2n+1} \tan^{-1}(z)}{\partial z^{2n+1}} = (-1)^n\,(2n)!\,(z^2+1)^{-n-\frac{1}{2}}\; T_{2n+1}\left(\frac{1}{\sqrt{z^2+1}}\right) \;/;\; n \in \mathbb{N}$$

Brychkov Yu.A. (2006)

01.14.20.0009.01

$$\frac{\partial^{2n} \tan^{-1}(z)}{\partial z^{2n}} = (-1)^n\,(2n-1)!\,z\,(z^2+1)^{-n-\frac{1}{2}}\; U_{2n-1}\left(\frac{1}{\sqrt{z^2+1}}\right) \;/;\; n \in \mathbb{N}^+$$

Brychkov Yu.A. (2006)

Fractional integro-differentiation

01.14.20.0004.01

$$\frac{\partial^\alpha \tan^{-1}(z)}{\partial z^\alpha} == 2^{\alpha-1}\sqrt{\pi}\; z^{1-\alpha}\; {}_3\tilde{F}_2\left(\frac{1}{2}, 1, 1;\; 1-\frac{\alpha}{2}, \frac{3}{2}-\frac{\alpha}{2};\; -z^2\right)$$

Integration

Indefinite integration

For the direct function itself

01.14.21.0001.01

$$\int \tan^{-1}(z)\, dz == z\tan^{-1}(z) - \frac{1}{2}\log(z^2+1)$$

01.14.21.0002.01

$$\int \frac{\tan^{-1}(z)}{z}\,dz = \frac{1}{2}\,i\,(\mathrm{Li}_2(-i\,z) - \mathrm{Li}_2(i\,z))$$

01.14.21.0003.01

$$\int \frac{\tan^{-1}(z)}{\sqrt{z}}\,dz = -\sqrt{2}\,\tan^{-1}\left(\sqrt{2}\,\sqrt{z}+1\right) + \sqrt{2}\,\tan^{-1}\left(1-\sqrt{2}\,\sqrt{z}\right) + 2\sqrt{z}\,\tan^{-1}(z) + \frac{\log\left(z+\sqrt{2}\,\sqrt{z}+1\right)}{\sqrt{2}} - \frac{\log\left(-z+\sqrt{2}\,\sqrt{z}-1\right)}{\sqrt{2}}$$

01.14.21.0004.01

$$\int z^n\,\tan^{-1}(z)\,dz = -\frac{z^{n+1}}{2\,(n+1)}\left(z\,\Phi\left(-z^2,\,1,\,\frac{n+2}{2}\right) - 2\tan^{-1}(z)\right)$$

01.14.21.0005.01

$$\int z^{\alpha-1}\,\tan^{-1}(z)\,dz = \frac{z^\alpha\,\tan^{-1}(z)}{\alpha} - \frac{z^{\alpha+1}}{\alpha\,(\alpha+1)}\,{}_2F_1\left(\frac{\alpha+1}{2},\,1;\,\frac{\alpha+3}{2};\,-z^2\right)$$

01.14.21.0006.01

$$\int \tan^{-1}(b+a\,z)\,dz = \frac{2\,(b+a\,z)\tan^{-1}(b+a\,z) - \log\left((b+a\,z)^2+1\right)}{2\,a}$$

01.14.21.0007.01

$$\int z\tan^{-1}(b+a\,z)\,dz = \frac{1}{2\,a^2}\left(-a\,z + \left(a^2\,z^2 - b^2 + 1\right)\tan^{-1}(b+a\,z) + b\log\left((b+a\,z)^2+1\right)\right)$$

01.14.21.0008.01

$$\int \frac{\tan^{-1}(a\,z+b)}{z}\,dz = \tan^{-1}(b+a\,z)\left(\log\left(-\sin\left(\tan^{-1}(b)-\tan^{-1}(b+a\,z)\right)\right) - \log\left(\frac{1}{\sqrt{(b+a\,z)^2+1}}\right)\right) + \frac{1}{2}\left(-i\left(\tan^{-1}(b)-\tan^{-1}(b+a\,z)\right)^2 + 2\log\left(-2\sin\left(\tan^{-1}(b)-\tan^{-1}(b+a\,z)\right)\right)\left(\tan^{-1}(b)-\tan^{-1}(b+a\,z)\right) - \frac{1}{4}\,i\left(\pi-2\tan^{-1}(b+a\,z)\right)^2 - \left(\pi-2\tan^{-1}(b+a\,z)\right)\log\left(\frac{2}{\sqrt{(b+a\,z)^2+1}}\right) + 2\left(\tan^{-1}(b+a\,z)-\tan^{-1}(b)\right)\log\left(1-e^{2\,i\left(\tan^{-1}(b+a\,z)-\tan^{-1}(b)\right)}\right) + \left(\pi-2\tan^{-1}(b+a\,z)\right)\log\left(1+e^{-2\,i\tan^{-1}(b+a\,z)}\right) - i\,\mathrm{Li}_2\left(e^{2\,i\left(\tan^{-1}(b+a\,z)-\tan^{-1}(b)\right)}\right) - i\,\mathrm{Li}_2\left(-e^{-2\,i\tan^{-1}(b+a\,z)}\right)\right)$$

01.14.21.0009.01

$$\int \frac{\tan^{-1}(z)}{a+z}\, dz = \tan^{-1}(z)\left(\frac{1}{2}\log(z^2+1)+\log(\sin(\tan^{-1}(a)+\tan^{-1}(z)))\right) + \frac{1}{2}\Big(-i\,(\tan^{-1}(a)+\tan^{-1}(z))^2 + 2\log\left(1-e^{2i(\tan^{-1}(a)+\tan^{-1}(z))}\right)(\tan^{-1}(a)+\tan^{-1}(z)) - 2\log(2\sin(\tan^{-1}(a)+\tan^{-1}(z)))\,(\tan^{-1}(a)+\tan^{-1}(z)) - \frac{1}{4}\,i\,(\pi-2\tan^{-1}(z))^2 + (\pi-2\tan^{-1}(z))\log\left(1+e^{-2i\tan^{-1}(z)}\right) - (\pi-2\tan^{-1}(z))\log\left(\frac{2}{\sqrt{z^2+1}}\right) - i\,\mathrm{Li}_2\left(-e^{-2i\tan^{-1}(z)}\right) - i\,\mathrm{Li}_2\left(e^{2i(\tan^{-1}(a)+\tan^{-1}(z))}\right)\Big)$$

01.14.21.0010.01

$$\int \frac{\tan^{-1}(b+az)}{d+cz}\, dz = \frac{1}{c}\Bigg(\tan^{-1}(b+az)\left(\log\left(\sin\left(\tan^{-1}\left(\frac{ad-bc}{c}\right)+\tan^{-1}(b+az)\right)\right)-\log\left(\frac{1}{\sqrt{(b+az)^2+1}}\right)\right) + \frac{1}{2}\Bigg(-i\left(\tan^{-1}\left(b-\frac{ad}{c}\right)-\tan^{-1}(b+az)\right)^2 + 2\log\left(2\sin\left(\tan^{-1}\left(\frac{ad-bc}{c}\right)+\tan^{-1}(b+az)\right)\right)\left(\tan^{-1}\left(b-\frac{ad}{c}\right)-\tan^{-1}(b+az)\right) - \frac{1}{4}\,i\,(\pi-2\tan^{-1}(b+az))^2 + (\pi-2\tan^{-1}(b+az))\log(1+\exp(-2i\tan^{-1}(b+az))) + 2\left(\tan^{-1}(b+az)-\tan^{-1}\left(b-\frac{ad}{c}\right)\right)\log\left(1-\exp\left(2i\left(\tan^{-1}(b+az)-\tan^{-1}\left(b-\frac{ad}{c}\right)\right)\right)\right) - (\pi-2\tan^{-1}(b+az))\log\left(\frac{2}{\sqrt{(b+az)^2+1}}\right) - i\,\mathrm{Li}_2(-\exp(-2i\tan^{-1}(b+az))) - i\,\mathrm{Li}_2\left(\exp\left(2i\left(\tan^{-1}(b+az)-\tan^{-1}\left(b-\frac{ad}{c}\right)\right)\right)\right)\Bigg)\Bigg)$$

01.14.21.0011.01

$$\int \tan^{-1}(az^2+bz+c)\, dz = \frac{1}{2a}\left(-i\sqrt{4a(c-i)-b^2}\,\tan^{-1}\left(\frac{b+2az}{\sqrt{4a(c-i)-b^2}}\right) + \sqrt{4a(c+i)-b^2}\;i\tan^{-1}\left(\frac{b+2az}{\sqrt{4a(c+i)-b^2}}\right) + (b+2az)\tan^{-1}(c+z(b+az))\right)$$

01.14.21.0012.01

$$\int \tan^{-1}(a\tan(z))\,dz = \frac{1}{4}\left(-\frac{\sqrt{1-a^2}\; e^{-\tanh^{-1}(a)}\tan^{-1}(a\tan(z))^2}{a} - \frac{\sqrt{1-a^2}\; e^{\tanh^{-1}(a)}\tan^{-1}(a\tan(z))^2}{a} + \frac{2\tan^{-1}(a\tan(z))^2}{a} + 4\,i\tanh^{-1}(a)\tan^{-1}(a\tan(z)) - 2\,i\log\left(1-\exp\left(2\,i\tan^{-1}(a\tan(z)) + 2\tanh^{-1}(a)\right)\right)\tan^{-1}(a\tan(z)) + 2\,i\log\left(1-\exp\left(2\,i\tan^{-1}(a\tan(z)) - 2\tanh^{-1}(a)\right)\right)\tan^{-1}(a\tan(z)) - 2\tanh^{-1}(a)\log\left(1-\exp\left(2\,i\tan^{-1}(a\tan(z)) + 2\tanh^{-1}(a)\right)\right) - 2\tanh^{-1}(a)\log\left(1-\exp\left(2\,i\tan^{-1}(a\tan(z)) - 2\tanh^{-1}(a)\right)\right) + 2\tanh^{-1}(a)\log\left(\sin\left(\tan^{-1}(a\tan(z)) + i\tanh^{-1}(a)\right)\right) + 2\tanh^{-1}(a)\log\left(\sin\left(\tan^{-1}(a\tan(z)) - i\tanh^{-1}(a)\right)\right) - \mathrm{Li}_2\left(\exp\left(2\,i\tan^{-1}(a\tan(z)) + 2\tanh^{-1}(a)\right)\right) + \mathrm{Li}_2\left(\exp\left(2\,i\tan^{-1}(a\tan(z)) - 2\tanh^{-1}(a)\right)\right)\right)$$

Involving the direct function

01.14.21.0013.01

$$\int e^{a z}\tan^{-1}(b z)\,dz = \frac{1}{2a}\left(2\,e^{a z}\tan^{-1}(b z) + e^{\frac{i a}{b}}\,i\,\mathrm{Ei}\left(a\left(-\frac{i}{b}+z\right)\right) - i\,e^{-\frac{i a}{b}}\,\mathrm{Ei}\left(a\left(\frac{i}{b}+z\right)\right)\right)$$

Definite integration

For the direct function itself

01.14.21.0014.01

$$\int_0^1 \tan^{-1}(t)\,dt = \frac{\pi}{4} - \frac{\log(2)}{2}$$

01.14.21.0015.01

$$\int_0^1 \frac{\tan^{-1}(t)}{t}\,dt = C$$

01.14.21.0016.01

$$\int_0^\infty t^a \tan^{-1}(t)\,dt = \frac{\pi}{2(a+1)}\csc\left(\frac{a\pi}{2}\right) /; -2 < \mathrm{Re}(a) < -1$$

Involving the direct function

01.14.21.0017.01

$$\int_0^\infty e^{-t}\tan^{-1}(t)\,dt = \frac{1}{2}(2\,\mathrm{Ci}(1)\sin(1) + \cos(1)(\pi - 2\,\mathrm{Si}(1)))$$

01.14.21.0018.01

$$\int_0^1 \log(t)\tan^{-1}(t)\,dt = \frac{1}{48}\left(24\log(2) + \pi^2 - 12\pi\right)$$

01.14.21.0019.01

$$\int_0^\infty \frac{\tan^{-1}(z t)}{t^2+1}\,dt = -\frac{1}{4z}\Phi\left(\frac{1}{z^2}, 2, \frac{1}{2}\right) + \frac{1}{2}\tanh^{-1}\left(\frac{1}{z}\right)\log\left(\frac{1}{z^2}\right) + \frac{\pi^2}{4}\mathrm{sgn}(z) /; z \in \mathbb{R}$$

Summation

Infinite summation

01.14.23.0001.01

$$\sum_{k=1}^{\infty} \tan^{-1}\left(\frac{2}{k^2}\right) == \frac{3\pi}{4}$$

01.14.23.0002.01

$$\sum_{k=1}^{\infty} \tan^{-1}\left(\frac{\sinh(z)}{\cosh(k z)}\right) == \frac{3\pi}{4} - \tan^{-1}(e^z)$$

Integral transforms

Laplace transforms

01.14.22.0001.01

$$\mathcal{L}_t\left[\tan^{-1}(t)\right](z) == \frac{1}{2 z} (2 \operatorname{Ci}(z) \sin(z) + \cos(z) (\pi - 2 \operatorname{Si}(z))) \text{ /; } \operatorname{Re}(z) > 0$$

Inverse Laplace transforms

01.14.22.0002.01

$$\mathcal{L}_t^{-1}\left[\tan^{-1}(t)\right](z) == -\frac{\sin(z)}{z}$$

Mellin transforms

01.14.22.0003.01

$$\mathcal{M}_t\left[\tan^{-1}(t)\right](z) == -\frac{\pi}{2 z} \sec\left(\frac{\pi z}{2}\right) \text{ /; } -1 < \operatorname{Re}(z) < 0$$

Representations through more general functions

Through hypergeometric functions

Involving ${}_2F_1$

01.14.26.0001.01

$$\tan^{-1}(z) == z \, {}_2F_1\left(1, \frac{1}{2}; \frac{3}{2}; -z^2\right)$$

01.14.26.0002.01

$$\tan^{-1}(z) == \frac{i}{2} \log(2) - \frac{i}{2} \log(i (z - i)) + \frac{z - i}{4} \, {}_2F_1\left(1, 1; 2; \frac{i}{2} (z - i)\right)$$

01.14.26.0003.01

$$\tan^{-1}(z) == -\frac{i}{2} \log(2) + \frac{i}{2} \log(-i (z + i)) + \frac{z + i}{4} \, {}_2F_1\left(1, 1; 2; -\frac{i}{2} (z + i)\right)$$

01.14.26.0004.01

$$\tan^{-1}(z) == \frac{\pi z}{2 \sqrt{z^2}} - \frac{1}{z} \, {}_2F_1\left(\frac{1}{2}, 1; \frac{3}{2}; -\frac{1}{z^2}\right) \text{ /; } i z \notin (-1, 1)$$

Through Meijer *G*

Classical cases for the direct function itself

01.14.26.0005.01

$$\tan^{-1}(z) = \frac{1}{2z} G_{2,2}^{1,2}\left(z^2 \middle| \begin{matrix} 1, \frac{3}{2} \\ 1, \frac{1}{2} \end{matrix}\right)$$

01.14.26.0006.01

$$\tan^{-1}(z) = \frac{\sqrt{z^2}}{2z} G_{2,2}^{1,2}\left(z^2 \middle| \begin{matrix} \frac{1}{2}, 1 \\ \frac{1}{2}, 0 \end{matrix}\right)$$

01.14.26.0007.01

$$\tan^{-1}(z) = \frac{1}{2} G_{2,2}^{1,2}\left(z^2 \middle| \begin{matrix} \frac{1}{2}, 1 \\ \frac{1}{2}, 0 \end{matrix}\right) /; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.26.0017.01

$$\tan^{-1}(z) - \sum_{k=0}^{n} \frac{(-1)^k z^{2k+1}}{2k+1} = \frac{(-1)^{n-1}\sqrt{z^2}}{2z} G_{3,3}^{1,3}\left(z^2 \middle| \begin{matrix} 1, n+\frac{3}{2}, \frac{1}{2} \\ n+\frac{3}{2}, 0, \frac{1}{2} \end{matrix}\right) /; n \in \mathbb{N}$$

01.14.26.0018.01

$$\tan^{-1}(z) - \frac{1}{4}\pi\left(\sqrt{\frac{1}{z^2}}\, z - \sqrt{-\frac{i}{-i+z}}\,\sqrt{i z+1} + \sqrt{1-\frac{i}{z}}\,\sqrt{\frac{z}{-i+z}} - \sqrt{1+\frac{i}{z}}\,\sqrt{\frac{z}{i+z}} + \sqrt{\frac{i}{i+z}}\,\sqrt{1-i z} + \frac{\sqrt{z^2}}{z}\right) +$$
$$\sum_{k=0}^{n} \frac{(-1)^k z^{-2k-1}}{2k+1} = \frac{(-1)^n z}{2}\sqrt{\frac{1}{z^2}}\, G_{3,3}^{1,3}\left(\frac{1}{z^2} \middle| \begin{matrix} 1, n+\frac{3}{2}, \frac{1}{2} \\ n+\frac{3}{2}, 0, \frac{1}{2} \end{matrix}\right) /; n \in \mathbb{N}$$

01.14.26.0008.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{1}{2} G_{2,2}^{1,2}\left(z \middle| \begin{matrix} 1, \frac{1}{2} \\ \frac{1}{2}, 0 \end{matrix}\right)$$

01.14.26.0019.01

$$\tan^{-1}\left(\sqrt{z}\right) - \sum_{k=0}^{n} \frac{(-1)^k z^{k+\frac{1}{2}}}{2k+1} = \frac{(-1)^{n-1}}{2} G_{3,3}^{1,3}\left(z \middle| \begin{matrix} 1, n+\frac{3}{2}, \frac{1}{2} \\ n+\frac{3}{2}, 0, \frac{1}{2} \end{matrix}\right) /; n \in \mathbb{N}$$

01.14.26.0020.01

$$\tan^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} + \sum_{k=0}^{n} \frac{(-1)^k z^{-k-\frac{1}{2}}}{2k+1} = \frac{(-1)^n \sqrt{z}}{2}\sqrt{\frac{1}{z}}\, G_{3,3}^{1,3}\left(\frac{1}{z} \middle| \begin{matrix} 1, n+\frac{3}{2}, \frac{1}{2} \\ n+\frac{3}{2}, 0, \frac{1}{2} \end{matrix}\right) /; n \in \mathbb{N} \land z \notin (-1, 0)$$

Generalized cases for the direct function itself

01.14.26.0009.01

$$\tan^{-1}(z) = \frac{1}{2} G_{2,2}^{1,2}\left(z, \frac{1}{2} \middle| \begin{matrix} \frac{1}{2}, 1 \\ \frac{1}{2}, 0 \end{matrix}\right)$$

01.14.26.0010.01

$$\tan^{-1}(z) = \frac{1}{2z} G_{2,2}^{1,2}\left(\sqrt{z^2}, \frac{1}{2} \middle| \begin{matrix} 1, \frac{3}{2} \\ 1, \frac{1}{2} \end{matrix}\right)$$

01.14.26.0021.01

$$\tan^{-1}(z)-\sum_{k=0}^{n}\frac{(-1)^k z^{2k+1}}{2k+1}=\frac{(-1)^{n-1}}{2}G_{3,3}^{1,3}\left(z,\frac{1}{2}\middle|\begin{array}{c}1,n+\frac{3}{2},\frac{1}{2}\\n+\frac{3}{2},0,\frac{1}{2}\end{array}\right)/;n\in\mathbb{N}$$

01.14.26.0022.01

$$\tan^{-1}(z)-\frac{1}{4}\pi\left(\sqrt{\frac{1}{z^2}}\,z-\sqrt{-\frac{i}{-i+z}}\sqrt{i z+1}+\sqrt{1-\frac{i}{z}}\sqrt{\frac{z}{-i+z}}-\sqrt{1+\frac{i}{z}}\sqrt{\frac{z}{i+z}}+\sqrt{\frac{i}{i+z}}\sqrt{1-i z}+\frac{\sqrt{z^2}}{z}\right)+$$
$$\sum_{k=0}^{n}\frac{(-1)^k z^{-2k-1}}{2k+1}=\frac{1}{2}(-1)^n G_{3,3}^{1,3}\left(\frac{1}{z},\frac{1}{2}\middle|\begin{array}{c}1,n+\frac{3}{2},\frac{1}{2}\\n+\frac{3}{2},0,\frac{1}{2}\end{array}\right)/;n\in\mathbb{N}$$

01.14.26.0023.01

$$\tan^{-1}(z)-\frac{\pi z}{2\sqrt{z^2}}+\sum_{k=0}^{n}\frac{(-1)^k z^{-2k-1}}{2k+1}=\frac{(-1)^n}{2}G_{3,3}^{1,3}\left(\frac{1}{z},\frac{1}{2}\middle|\begin{array}{c}1,n+\frac{3}{2},\frac{1}{2}\\n+\frac{3}{2},0,\frac{1}{2}\end{array}\right)/;n\in\mathbb{N}\bigwedge i z\notin(-1,1)$$

Through other functions

Involving inverse Jacobi functions

01.14.26.0011.01

$$\tan^{-1}(z)=\operatorname{cs}^{-1}\left(\frac{1}{z}\middle|0\right)$$

01.14.26.0012.01

$$\tan^{-1}(z)=i\operatorname{ns}^{-1}\left(\frac{i}{z}\middle|1\right)$$

01.14.26.0013.01

$$\tan^{-1}(z)=\operatorname{sc}^{-1}(z\mid 0)$$

01.14.26.0014.01

$$\tan^{-1}(z)=-i\operatorname{sn}^{-1}(i z\mid 1)$$

Involving some elliptic-type functions

01.14.26.0015.01

$$\tan^{-1}(z)=\frac{1}{2}\operatorname{am}(\log(z)\mid 1)+\frac{\pi}{4}$$

Involving some hypergeometric-type functions

01.14.26.0016.01

$$\tan^{-1}(z)=-\frac{\sqrt{-z^2}}{2z}B_{-z^2}\left(\frac{1}{2},0\right)$$

Representations through equivalent functions

With inverse function

Involving $\tan^{-1}(\tan(z))$

01.14.27.0001.01

$$\tan^{-1}(\tan(z)) = z \;/;\; -\frac{\pi}{2} < \mathrm{Re}(z) < \frac{\pi}{2} \bigvee \left(\mathrm{Re}(z) = -\frac{\pi}{2} \bigwedge \mathrm{Im}(z) < 0\right) \bigvee \left(\mathrm{Re}(z) = \frac{\pi}{2} \bigwedge \mathrm{Im}(z) > 0\right)$$

01.14.27.0002.01

$$\tan^{-1}(\tan(z)) = z + \pi \;/;\; -\frac{3\pi}{2} < \mathrm{Re}(z) < -\frac{\pi}{2} \bigvee \left(\mathrm{Re}(z) = -\frac{3\pi}{2} \bigwedge \mathrm{Im}(z) < 0\right) \bigvee \left(\mathrm{Re}(z) = -\frac{\pi}{2} \bigwedge \mathrm{Im}(z) > 0\right)$$

01.14.27.0003.01

$$\tan^{-1}(\tan(z)) = z - \pi \;/;\; \frac{\pi}{2} < \mathrm{Re}(z) < \frac{3\pi}{2} \bigvee \left(\mathrm{Re}(z) = \frac{\pi}{2} \bigwedge \mathrm{Im}(z) < 0\right) \bigvee \left(\mathrm{Re}(z) = \frac{3\pi}{2} \bigwedge \mathrm{Im}(z) > 0\right)$$

01.14.27.0004.01

$$\tan^{-1}(\tan(z)) = z - \pi k \;/;\; \left(k\pi - \frac{\pi}{2} < \mathrm{Re}(z) < \pi k + \frac{\pi}{2} \bigvee \left(\mathrm{Re}(z) = k\pi - \frac{\pi}{2} \bigwedge \mathrm{Im}(z) < 0\right) \bigvee \left(\mathrm{Re}(z) = \pi k + \frac{\pi}{2} \bigwedge \mathrm{Im}(z) > 0\right)\right) \bigwedge k \in \mathbb{Z}$$

01.14.27.0005.01

$$\tan^{-1}(\tan(z)) = z - \pi \left\lfloor \frac{\mathrm{Re}(z)}{\pi} + \frac{1}{2} \right\rfloor + \frac{1}{2}\left(1 + (-1)^{\left\lfloor \frac{\mathrm{Re}(z)}{\pi} - \frac{1}{2} \right\rfloor + \left\lfloor \frac{1}{2} - \frac{\mathrm{Re}(z)}{\pi} \right\rfloor}\right) \pi\, \theta(\mathrm{Im}(z)) \;/;\; \frac{z}{\pi} - \frac{1}{2} \notin \mathbb{Z}$$

01.14.27.2798.01

$$\tan^{-1}(\tan(z)) = \begin{cases} ¿ & \frac{2z+\pi}{2\pi} \in \mathbb{Z} \\ z - \pi \left\lfloor \frac{2\,\mathrm{Re}(z)-\pi}{2\pi} \right\rfloor & \frac{2\,\mathrm{Re}(z)+\pi}{2\pi} \in \mathbb{Z} \bigwedge \mathrm{Im}(z) > 0 \\ z - \pi \left\lfloor \frac{2\,\mathrm{Re}(z)+\pi}{2\pi} \right\rfloor & \mathrm{True} \end{cases}$$

01.14.27.2799.01

$$\tan^{-1}(\tan(z)) = \cot^{-1}(\cot(z)) \;/;\; \frac{2z+\pi}{2\pi} \notin \mathbb{Z}$$

Involving $\tan(\tan^{-1}(z))$

01.14.27.0006.01

$$\tan(\tan^{-1}(z)) = z$$

01.14.27.0007.01

$$\tan(n \tan^{-1}(z)) = -\frac{i\,((i z + 1)^n - (1 - i z)^n)}{(i z + 1)^n + (1 - i z)^n} \;/;\; n \in \mathbb{N}^+$$

Involving $\tan^{-1}(\cot(z))$

01.14.27.2800.01

$$0 < \mathrm{Re}(z) < \pi \lor (\mathrm{Re}(z) = \pi \land \mathrm{Im}(z) > 0) \lor (\mathrm{Re}(z) = 0 \land \mathrm{Im}(z) < 0)$$

01.14.27.2801.01

$$\tan^{-1}(\cot(z)) = -\pi < \mathrm{Re}(z) < 0 \bigvee (\mathrm{Re}(z) = 0 \land \mathrm{Im}(z) > 0) \bigvee (\mathrm{Re}(z) = -\pi \land \mathrm{Im}(z) < 0)$$

01.14.27.2802.01

$$\tan^{-1}(\cot(z)) = \pi k + \frac{\pi}{2} - z \;/;\; (k\pi < \mathrm{Re}(z) < \pi k + \pi \lor (\mathrm{Re}(z) = \pi k + \pi \land \mathrm{Im}(z) > 0) \lor (\mathrm{Re}(z) = k\pi \land \mathrm{Im}(z) < 0)) \land k \in \mathbb{Z}$$

01.14.27.2803.01

$$\tan^{-1}(\cot(z)) = -\frac{\pi}{2} - z - \pi \left\lfloor -\frac{\mathrm{Re}(z)}{\pi} \right\rfloor + \frac{\pi}{2}\left(1 + (-1)^{\left\lfloor \frac{\mathrm{Re}(z)}{\pi} \right\rfloor + \left\lfloor -\frac{\mathrm{Re}(z)}{\pi} \right\rfloor}\right) \theta(-\mathrm{Im}(z)) \;/;\; \frac{z}{\pi} \notin \mathbb{Z}$$

01.14.27.2804.01

$$\tan^{-1}(\cot(z)) = \begin{cases} ¿ & \frac{z}{\pi} \in \mathbb{Z} \\ -z + \pi \left\lfloor \frac{\operatorname{Re}(z)}{\pi} \right\rfloor - \frac{\pi}{2} & \frac{\operatorname{Re}(z)}{\pi} \in \mathbb{Z} \bigwedge \operatorname{Im}(z) > 0 \\ -z + \pi \left\lfloor \frac{\operatorname{Re}(z)}{\pi} \right\rfloor + \frac{\pi}{2} & \text{True} \end{cases}$$

01.14.27.2805.01

$$\tan^{-1}(\cot(z)) = \cot^{-1}(\tan(z)) \;/;\; \frac{z}{\pi} \notin \mathbb{Z}$$

With related functions

Involving log

01.14.27.0008.01

$$\tan^{-1}(z) == \frac{i}{2} (\log(1 - i\, z) - \log(1 + i\, z))$$

01.14.27.0009.01

$$\tan^{-1}(z) == \frac{i}{2} \log\left(\frac{1 - i\, z}{1 + i\, z}\right) /; i\, z \notin (-\infty, -1)$$

01.14.27.0010.01

$$\tan^{-1}(z) == i \log\left(\sqrt{\frac{i + z}{i - z}}\right) /; i\, z \notin (-\infty, -1)$$

01.14.27.0011.01

$$\tan^{-1}(z) == -i \log\left((i\, z + 1) \sqrt{\frac{1}{z^2 + 1}}\right) /; i\, z \notin (-\infty, -1) \bigwedge i\, z \notin (1, \infty)$$

Involving $\sin^{-1}$

Involving $\tan^{-1}(z)$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\frac{2z}{1+z^2}\right)$

01.14.27.0040.01

$$\tan^{-1}(z) == \frac{1}{2} \sin^{-1}\left(\frac{2\, z}{z^2 + 1}\right) /; |z| < 1$$

01.14.27.0041.01

$$\tan^{-1}(z) == \frac{\pi}{2} - \frac{1}{2} \sin^{-1}\left(\frac{2\, z}{z^2 + 1}\right) /; |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0042.01

$$\tan^{-1}(z) == -\frac{1}{2} \sin^{-1}\left(\frac{2\, z}{z^2 + 1}\right) - \frac{\pi}{2} /; |z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}\right)$$

01.14.27.0043.01

$$\tan^{-1}(z) = \frac{\pi\sqrt{z^2}}{2z} - \frac{1}{2}\sin^{-1}\left(\frac{2z}{z^2+1}\right) /; |z| > 1$$

01.14.27.0044.01

$$\tan^{-1}(z) = \frac{\pi\sqrt{z^2}}{4z}\left(1 - \frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\right) + \frac{(1-z)}{2(1+z)}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\sin^{-1}\left(\frac{2z}{z^2+1}\right) /; |z| \neq 1$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\frac{1-z^2}{1+z^2}\right)$

01.14.27.0045.01

$$\tan^{-1}(z) = -\frac{1}{2}\sin^{-1}\left(\frac{1-z^2}{1+z^2}\right) + \frac{\pi}{4} /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0046.01

$$\tan^{-1}(z) = \frac{1}{2}\sin^{-1}\left(\frac{1-z^2}{1+z^2}\right) - \frac{\pi}{4} /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0047.01

$$\tan^{-1}(z) = \frac{3\pi}{4} + \frac{1}{2}\sin^{-1}\left(\frac{1-z^2}{1+z^2}\right) /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.0048.01

$$\tan^{-1}(z) = -\frac{3\pi}{4} - \frac{1}{2}\sin^{-1}\left(\frac{1-z^2}{1+z^2}\right) /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.0049.01

$$\tan^{-1}(z) = \frac{\pi}{4}\left(\sqrt{\frac{1}{1-i z}}\sqrt{1-i z} - \sqrt{i z+1}\sqrt{\frac{1}{i z+1}} + \frac{\sqrt{z^2}}{z}\right) - \frac{\sqrt{z^2}\sqrt{z^2+1}}{2z}\sqrt{\frac{1}{z^2+1}}\sin^{-1}\left(\frac{1-z^2}{1+z^2}\right)$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\frac{z^2-1}{z^2+1}\right)$

01.14.27.0050.01

$$\tan^{-1}(z) = \frac{1}{2}\sin^{-1}\left(\frac{z^2-1}{z^2+1}\right) + \frac{\pi}{4} /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0051.01

$$\tan^{-1}(z) = -\frac{1}{2}\sin^{-1}\left(\frac{z^2-1}{z^2+1}\right) - \frac{\pi}{4} /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0052.01

$$\tan^{-1}(z) = \frac{3\pi}{4} - \frac{1}{2}\sin^{-1}\left(\frac{z^2-1}{z^2+1}\right) /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.0053.01

$$\tan^{-1}(z) = -\frac{3\pi}{4} + \frac{1}{2}\sin^{-1}\left(\frac{z^2-1}{z^2+1}\right) /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.0054.01

$$\tan^{-1}(z) = \frac{\pi}{4}\left(\sqrt{\frac{1}{1-i z}}\,\sqrt{1-i z}-\sqrt{i z+1}\,\sqrt{\frac{1}{i z+1}}+\frac{\sqrt{z^2}}{z}\right)+\frac{\sqrt{z^2}\,\sqrt{z^2+1}}{2 z}\sqrt{\frac{1}{z^2+1}}\,\sin^{-1}\left(\frac{z^2-1}{z^2+1}\right)$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\frac{1}{\sqrt{z^2+1}}\right)$

01.14.27.0055.01

$$\tan^{-1}(z) = \frac{\pi}{2}-\sin^{-1}\left(\frac{1}{\sqrt{z^2+1}}\right) /;\ -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0056.01

$$\tan^{-1}(z) = \sin^{-1}\left(\frac{1}{\sqrt{z^2+1}}\right)-\frac{\pi}{2} /;\ \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0057.01

$$\tan^{-1}(z) = \frac{\pi\sqrt{z^2}}{2 z}-\frac{\sqrt{z^2}}{z}\sin^{-1}\left(\frac{1}{\sqrt{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right)$

01.14.27.0058.01

$$\tan^{-1}(z) = \frac{\pi}{2}-\sin^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right) /;\ \mathrm{Re}(z) > 0 \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0059.01

$$\tan^{-1}(z) = \sin^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right)-\frac{\pi}{2} /;\ \mathrm{Re}(z) < 0 \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0060.01

$$\tan^{-1}(z) = \frac{\pi}{2}+\sin^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right) /;\ (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.0061.01

$$\tan^{-1}(z) = -\frac{\pi}{2}-\sin^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right) /;\ (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.0062.01

$$\tan^{-1}(z) = \frac{\pi\sqrt{z^2}}{2 z}-\frac{\sqrt{z^2}\,\sqrt{z^2+1}}{z}\sqrt{\frac{1}{z^2+1}}\,\sin^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\frac{z}{\sqrt{1+z^2}}\right)$

01.14.27.0063.01

$$\tan^{-1}(z) = \sin^{-1}\left(\frac{z}{\sqrt{z^2+1}}\right) /; \operatorname{Re}(z) \neq 0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 1)$$

01.14.27.0064.01

$$\tan^{-1}(z) = \pi - \sin^{-1}\left(\frac{z}{\sqrt{z^2+1}}\right) /; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0065.01

$$\tan^{-1}(z) = -\pi - \sin^{-1}\left(\frac{z}{\sqrt{z^2+1}}\right) /; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0066.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}} - \sqrt{i\,z+1}\,\sqrt{\frac{1}{i\,z+1}}\right) + \sqrt{\frac{1}{z^2+1}}\,\sqrt{z^2+1}\,\sin^{-1}\left(\frac{z}{\sqrt{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1+z^2}}\right)$

01.14.27.0067.01

$$\tan^{-1}(z) = \sin^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{z^2+1}}\right) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0068.01

$$\tan^{-1}(z) = -\sin^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{z^2+1}}\right) /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0069.01

$$\tan^{-1}(z) = \pi - \sin^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{z^2+1}}\right) /; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0070.01

$$\tan^{-1}(z) = -\pi + \sin^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{z^2+1}}\right) /; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0071.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}} - \sqrt{i\,z+1}\,\sqrt{\frac{1}{i\,z+1}}\right) + \frac{z^2+1}{z}\,\sqrt{\frac{1}{z^2+1}}\,\sqrt{\frac{z^2}{z^2+1}}\,\sin^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-1-z^2}}\right)$

01.14.27.0072.01

$$\tan^{-1}(z) = \sin^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-1-z^2}}\right) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0073.01

$$\tan^{-1}(z) = -\sin^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-1-z^2}}\right) /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0074.01

$$\tan^{-1}(z) = \pi - \sin^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-1-z^2}}\right) /; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0075.01

$$\tan^{-1}(z) = -\pi + \sin^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-1-z^2}}\right) /; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0076.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}} - \sqrt{i\,z+1}\,\sqrt{\frac{1}{i\,z+1}}\right) + z\sqrt{\frac{1}{z^2}}\,\sin^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-z^2-1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\sqrt{\frac{z^2}{z^2+1}}\right)$

01.14.27.0077.01

$$\tan^{-1}(z) = \sin^{-1}\left(\sqrt{\frac{z^2}{z^2+1}}\right) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0078.01

$$\tan^{-1}(z) = -\sin^{-1}\left(\sqrt{\frac{z^2}{z^2+1}}\right) /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0079.01

$$\tan^{-1}(z) = \pi - \sin^{-1}\left(\sqrt{\frac{z^2}{z^2+1}}\right) /; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0080.01

$$\tan^{-1}(z) = -\pi + \sin^{-1}\left(\sqrt{\frac{z^2}{z^2+1}}\right) /; (i\, z \in \mathbb{R} \land i\, z > 1)$$

01.14.27.0081.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}} - \sqrt{i\,z+1}\,\sqrt{\frac{1}{i\,z+1}}\right) + \frac{\sqrt{z^2}}{z}\sqrt{\frac{1}{z^2+1}}\,\sqrt{z^2+1}\,\sin^{-1}\left(\sqrt{\frac{z^2}{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\sqrt{\sqrt{1+z^2}+1} \Big/ \left(\sqrt{2}\,(1+z^2)^{1/4}\right)\right)$

01.14.27.0082.01

$$\tan^{-1}(z) = \pi - 2\sin^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}+1}}{\sqrt{2}\,(1+z^2)^{1/4}}\right) /; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0083.01

$$\tan^{-1}(z) = 2\sin^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}+1}}{\sqrt{2}\,(1+z^2)^{1/4}}\right) - \pi /; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0084.01

$$\tan^{-1}(z) = \frac{\sqrt{z^2}}{z}\left(\pi - 2\sin^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}+1}}{\sqrt{2}\,(1+z^2)^{1/4}}\right)\right)$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\sqrt{\sqrt{1+z^2}-1} \Big/ \left(\sqrt{2}\,(1+z^2)^{1/4}\right)\right)$

01.14.27.0085.01

$$\tan^{-1}(z) = 2\sin^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}-1}}{\sqrt{2}\,(1+z^2)^{1/4}}\right) /; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0086.01

$$\tan^{-1}(z) = -2\sin^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}-1}}{\sqrt{2}\,(1+z^2)^{1/4}}\right)/;\ \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0087.01

$$\tan^{-1}(z) = \frac{2\sqrt{z^2}}{z}\sin^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}-1}}{\sqrt{2}\,(1+z^2)^{1/4}}\right)$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\sqrt{\left(\sqrt{1+z^2}+1\right)\Big/\left(2\sqrt{1+z^2}\right)}\right)$

01.14.27.0088.01

$$\tan^{-1}(z) = \pi - 2\sin^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}+1}{2\sqrt{z^2+1}}}\right)/;\ -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0089.01

$$\tan^{-1}(z) = 2\sin^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}+1}{2\sqrt{z^2+1}}}\right) - \pi\ /;\ \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0090.01

$$\tan^{-1}(z) = \frac{\sqrt{z^2}}{z}\left(\pi - 2\sin^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}+1}{2\sqrt{z^2+1}}}\right)\right)$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\sqrt{\left(\sqrt{1+z^2}-1\right)\Big/\left(2\sqrt{1+z^2}\right)}\right)$

01.14.27.0091.01

$$\tan^{-1}(z) = 2\sin^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-1}{2\sqrt{z^2+1}}}\right)/;\ -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0092.01

$$\tan^{-1}(z) = -2\sin^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-1}{2\sqrt{z^2+1}}}\right)/;\ \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0093.01

$$\tan^{-1}(z) = \frac{2\sqrt{z^2}}{z}\sin^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-1}{2\sqrt{z^2+1}}}\right)$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\sqrt{\sqrt{1+z^2}+z}\Big/\left(\sqrt{2}\left(1+z^2\right)^{1/4}\right)\right)$

01.14.27.0094.01

$$\tan^{-1}(z) = 2\sin^{-1}\left(\frac{\sqrt{z+\sqrt{z^2+1}}}{\sqrt{2}\sqrt[4]{z^2+1}}\right) - \frac{\pi}{2} \;/;\; i\,z \notin (-\infty, -1)$$

01.14.27.0095.01

$$\tan^{-1}(z) = \frac{3\pi}{2} - 2\sin^{-1}\left(\frac{\sqrt{z+\sqrt{z^2+1}}}{\sqrt{2}\sqrt[4]{z^2+1}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0096.01

$$\tan^{-1}(z) = 2\sqrt{i\,z+1}\sqrt{\frac{1}{i\,z+1}}\sin^{-1}\left(\frac{\sqrt{z+\sqrt{z^2+1}}}{\sqrt{2}\sqrt[4]{z^2+1}}\right) - \left(\sqrt{i\,z+1}\sqrt{\frac{1}{i\,z+1}} - \frac{1}{2}\right)\pi$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\sqrt{\sqrt{1+z^2}-z}\Big/\left(\sqrt{2}\left(1+z^2\right)^{1/4}\right)\right)$

01.14.27.0097.01

$$\tan^{-1}(z) = -2\sin^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}-z}}{\sqrt{2}\left(1+z^2\right)^{1/4}}\right) + \frac{\pi}{2} \;/;\; i\,z \notin (1, \infty)$$

01.14.27.0098.01

$$\tan^{-1}(z) = -\frac{3\pi}{2} + 2\sin^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}-z}}{\sqrt{2}\left(1+z^2\right)^{1/4}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0099.01

$$\tan^{-1}(z) = \left(\sqrt{1 - i\,z}\,\sqrt{\frac{1}{1 - i\,z}} - \frac{1}{2}\right)\pi - 2\sqrt{1 - i\,z}\,\sqrt{\frac{1}{1 - i\,z}}\,\sin^{-1}\left(\sqrt{\frac{\sqrt{z^2 + 1} - z}{\sqrt{2}\,\sqrt[4]{z^2 + 1}}}\right)$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\sqrt{\left(\sqrt{1 + z^2} + z\right) \Big/ \left(2\sqrt{1 + z^2}\right)}\right)$

01.14.27.0100.01

$$\tan^{-1}(z) = 2\sin^{-1}\left(\sqrt{\frac{\sqrt{1 + z^2} + z}{2\sqrt{1 + z^2}}}\right) - \frac{\pi}{2} \;/;\; i\,z \notin (-\infty, -1) \bigwedge i\,z \notin (1, \infty)$$

01.14.27.0101.01

$$\tan^{-1}(z) = \frac{3\pi}{2} - 2\sin^{-1}\left(\sqrt{\frac{\sqrt{1 + z^2} + z}{2\sqrt{1 + z^2}}}\right) /;\; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0102.01

$$\tan^{-1}(z) = -\frac{\pi}{2} - 2\sin^{-1}\left(\sqrt{\frac{\sqrt{1 + z^2} + z}{2\sqrt{1 + z^2}}}\right) /;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0103.01

$$\tan^{-1}(z) = \pi\left(\frac{1}{2} - \sqrt{i\,z + 1}\,\sqrt{\frac{1}{i\,z + 1}}\right) + 2\sqrt{\frac{1}{z^2 + 1}}\,\sqrt{z^2 + 1}\,\sin^{-1}\left(\sqrt{\frac{z + \sqrt{z^2 + 1}}{2\sqrt{z^2 + 1}}}\right)$$

Involving $\tan^{-1}(z)$ and $\sin^{-1}\left(\sqrt{\left(\sqrt{1 + z^2} - z\right) \Big/ \left(2\sqrt{1 + z^2}\right)}\right)$

01.14.27.0104.01

$$\tan^{-1}(z) = -2\sin^{-1}\left(\sqrt{\frac{\sqrt{1 + z^2} - z}{2\sqrt{1 + z^2}}}\right) + \frac{\pi}{2} \;/;\; i\,z \notin (-\infty, -1) \bigwedge i\,z \notin (1, \infty)$$

01.14.27.0105.01

$$\tan^{-1}(z) = -\frac{3\pi}{2} + 2\sin^{-1}\left(\sqrt{\frac{\sqrt{1 + z^2} - z}{2\sqrt{1 + z^2}}}\right) /;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0106.01

$$\tan^{-1}(z) = \frac{\pi}{2} + 2\sin^{-1}\left(\sqrt{\frac{\sqrt{1+z^2}-z}{2\sqrt{1+z^2}}}\right) /; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0107.01

$$\tan^{-1}(z) = \left(\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}} - \frac{1}{2}\right)\pi - 2\sqrt{z^2+1}\,\sqrt{\frac{1}{z^2+1}}\,\sin^{-1}\left(\sqrt{\frac{\sqrt{1+z^2}-z}{2\sqrt{1+z^2}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sin^{-1}\left(\frac{1-z}{1+z}\right)$

01.14.27.0108.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\frac{1}{2}\sin^{-1}\left(\frac{1-z}{1+z}\right) + \frac{\pi}{4} /; z \notin (-\infty, -1)$$

01.14.27.0109.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{3\pi}{4} + \frac{1}{2}\sin^{-1}\left(\frac{1-z}{1+z}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0110.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{1}{4}\pi\left(2 - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right) - \frac{1}{2}\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\sin^{-1}\left(\frac{1-z}{1+z}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sin^{-1}\left(\frac{z-1}{z+1}\right)$

01.14.27.0111.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{1}{2}\sin^{-1}\left(\frac{z-1}{z+1}\right) + \frac{\pi}{4} /; z \notin (-\infty, -1)$$

01.14.27.0112.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{3\pi}{4} - \frac{1}{2}\sin^{-1}\left(\frac{z-1}{z+1}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0113.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{1}{4}\pi\left(2 - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right) + \frac{1}{2}\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\sin^{-1}\left(\frac{z-1}{z+1}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sin^{-1}\left(\frac{2\sqrt{z}}{1+z}\right)$

01.14.27.0114.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{1}{2}\sin^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) /; |z| < 1$$

01.14.27.0115.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - \frac{1}{2}\sin^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) /; |z| > 1$$

01.14.27.0116.01

$$\tan^{-1}\left(\sqrt{z}\right) = \left(1 - \frac{1-z}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\right)\frac{\pi}{4} + \frac{1-z}{2(z+1)}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\sin^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sin^{-1}\left(\frac{1}{\sqrt{z+1}}\right)$

01.14.27.0117.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - \sin^{-1}\left(\frac{1}{\sqrt{z+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sin^{-1}\left(\sqrt{\frac{1}{z+1}}\right)$

01.14.27.0118.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - \sin^{-1}\left(\sqrt{\frac{1}{z+1}}\right) /; z \notin (-\infty, -1)$$

01.14.27.0119.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} + \sin^{-1}\left(\sqrt{\frac{1}{z+1}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0120.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\sin^{-1}\left(\sqrt{\frac{1}{z+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sin^{-1}\left(\frac{\sqrt{z}}{\sqrt{1+z}}\right)$

01.14.27.0121.01

$$\tan^{-1}\left(\sqrt{z}\right) = \sin^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) /; z \notin (-\infty, -1)$$

01.14.27.0122.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi - \sin^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0123.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}\left(1 - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\right) + \sqrt{\frac{1}{z+1}}\sqrt{z+1}\sin^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sin^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-1-z}}\right)$

01.14.27.0124.01

$$\tan^{-1}(\sqrt{z}) = \sin^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) /; |\arg(z)| < \pi$$

01.14.27.0125.01

$$\tan^{-1}(\sqrt{z}) = -\sin^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0126.01

$$\tan^{-1}(\sqrt{z}) = \pi - \sin^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0127.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2}\left(1 - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\right) + \sqrt{\frac{1}{z}}\sqrt{z}\sin^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sin^{-1}\left(\sqrt{\frac{z}{z+1}}\right)$

01.14.27.0128.01

$$\tan^{-1}(\sqrt{z}) = \sin^{-1}\left(\sqrt{\frac{z}{z+1}}\right) /; z \notin (-\infty, -1)$$

01.14.27.0129.01

$$\tan^{-1}(\sqrt{z}) = \pi - \sin^{-1}\left(\sqrt{\frac{z}{z+1}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0130.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2}\left(1 - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\right) + \sqrt{\frac{1}{z+1}}\sqrt{z+1}\sin^{-1}\left(\sqrt{\frac{z}{z+1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sin^{-1}\left(\sqrt{\sqrt{1+z}+1} \Big/ \left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0131.01

$$\tan^{-1}(\sqrt{z}) = \pi - 2\sin^{-1}\left(\frac{\sqrt{\sqrt{z+1}+1}}{\sqrt{2}\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sin^{-1}\left(\sqrt{\sqrt{1+z}-1} \Big/ \left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0132.01

$$\tan^{-1}(\sqrt{z}) == 2\sin^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sin^{-1}\left(\sqrt{(\sqrt{1+z}+1)/(2\sqrt{1+z})}\right)$

01.14.27.0133.01

$$\tan^{-1}(\sqrt{z}) == \pi - 2\sin^{-1}\left(\sqrt{\frac{\sqrt{z+1}+1}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sin^{-1}\left(\sqrt{(\sqrt{1+z}-1)/(2\sqrt{1+z})}\right)$

01.14.27.0134.01

$$\tan^{-1}(\sqrt{z}) == 2\sin^{-1}\left(\sqrt{\frac{\sqrt{z+1}-1}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sin^{-1}\left(\sqrt{\sqrt{1+z}+\sqrt{z}}\Big/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0135.01

$$\tan^{-1}(\sqrt{z}) == 2\sin^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) - \frac{\pi}{2} \text{ /; } z \notin (-\infty, -1)$$

01.14.27.0136.01

$$\tan^{-1}(\sqrt{z}) == \frac{3\pi}{2} - 2\sin^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) \text{ /; } (z \in \mathbb{R} \land z < -1)$$

01.14.27.0137.01

$$\tan^{-1}(\sqrt{z}) == \left(\frac{1}{2} - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right)\pi + 2\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\sin^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sin^{-1}\left(\sqrt{\sqrt{1+z}-\sqrt{z}}\Big/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0138.01

$$\tan^{-1}(\sqrt{z}) == \frac{\pi}{2} - 2\sin^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sin^{-1}\left(\sqrt{(\sqrt{1+z}+\sqrt{z})/(2\sqrt{1+z})}\right)$

01.14.27.0139.01

$$\tan^{-1}(\sqrt{z}) = 2\sin^{-1}\left(\sqrt{\frac{\sqrt{1+z}+\sqrt{z}}{2\sqrt{1+z}}}\right) - \frac{\pi}{2} \;/;\; z \notin (-\infty, -1)$$

01.14.27.0140.01

$$\tan^{-1}(\sqrt{z}) = \frac{3\pi}{2} - 2\sin^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0141.01

$$\tan^{-1}(\sqrt{z}) = \pi\left(-\sqrt{z+1}\sqrt{\frac{1}{z+1}} + \frac{1}{2}\right) + 2\sqrt{\frac{1}{z+1}}\sqrt{z+1}\,\sin^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sin^{-1}\left(\sqrt{(\sqrt{1+z}-\sqrt{z})/(2\sqrt{1+z})}\right)$

01.14.27.0142.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} - 2\sin^{-1}\left(\sqrt{\frac{\sqrt{1+z}-\sqrt{z}}{2\sqrt{1+z}}}\right) \;/;\; z \notin (-\infty, -1)$$

01.14.27.0143.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} + 2\sin^{-1}\left(\sqrt{\frac{\sqrt{1+z}-\sqrt{z}}{2\sqrt{1+z}}}\right) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0144.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} - 2\sqrt{z+1}\sqrt{\frac{1}{z+1}}\,\sin^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\frac{1-z}{1+z}\right)$

01.14.27.0145.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4} + \frac{1}{2}\sin^{-1}\left(\frac{1-z}{1+z}\right) \;/;\; |\arg(z)| < \pi$$

01.14.27.0146.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\sin^{-1}\left(\frac{1-z}{1+z}\right) - \frac{3\pi}{4} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0147.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -\frac{1}{2}\sin^{-1}\left(\frac{1-z}{1+z}\right) - \frac{\pi}{4} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0148.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{4}\left(2\sqrt{z}\sqrt{\frac{1}{z}} - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\right) + \frac{z\sqrt{-z-1}}{2\sqrt{-z(z+1)}}\sqrt{\frac{1}{z}}\sin^{-1}\left(\frac{1-z}{1+z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\frac{z-1}{z+1}\right)$

01.14.27.0149.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{4} - \frac{1}{2}\sin^{-1}\left(\frac{z-1}{z+1}\right) \;/;\; |\arg(z)| < \pi$$

01.14.27.0150.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -\frac{1}{2}\sin^{-1}\left(\frac{z-1}{z+1}\right) - \frac{3\pi}{4} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0151.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{1}{2}\sin^{-1}\left(\frac{z-1}{z+1}\right) - \frac{\pi}{4} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0152.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{4}\left(2\sqrt{z}\sqrt{\frac{1}{z}} - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\right) - \frac{z\sqrt{-z-1}}{2\sqrt{-z(z+1)}}\sqrt{\frac{1}{z}}\sin^{-1}\left(\frac{z-1}{z+1}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\frac{2\sqrt{z}}{1+z}\right)$

01.14.27.0153.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2} - \frac{1}{2}\sin^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) \;/;\; |z| < 1 \bigwedge z \notin (-1, 0)$$

01.14.27.0154.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -\frac{1}{2}\sin^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0155.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2}\sqrt{z}\sqrt{\frac{1}{z}} - \frac{1}{2}\sin^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) \;/;\; |z| < 1$$

01.14.27.0156.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{1}{2}\sin^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) \;/;\; |z| > 1$$

01.14.27.0157.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4}\left(-\frac{z-1}{z+1}\sqrt{\left(\frac{z+1}{z-1}\right)^2} + 2\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 1\right) - \frac{1-z}{2(z+1)}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\sin^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\frac{1}{\sqrt{1+z}}\right)$

01.14.27.0158.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \sin^{-1}\left(\frac{1}{\sqrt{1+z}}\right) /; z \notin (-1, 0)$$

01.14.27.0159.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \sin^{-1}\left(\frac{1}{\sqrt{z+1}}\right) - \pi /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0160.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \sin^{-1}\left(\frac{1}{\sqrt{z+1}}\right) - \frac{\pi}{2}\left(1 - \sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\sqrt{\frac{1}{1+z}}\right)$

01.14.27.0161.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \sin^{-1}\left(\sqrt{\frac{1}{1+z}}\right) /; |\arg(z)| < \pi$$

01.14.27.0162.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \sin^{-1}\left(\sqrt{\frac{1}{1+z}}\right) - \pi /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0163.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\sin^{-1}\left(\sqrt{\frac{1}{1+z}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0164.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \sqrt{1+z}\sqrt{\frac{1}{1+z}}\sin^{-1}\left(\sqrt{\frac{1}{1+z}}\right) - \frac{\pi}{2}\left(1 - \sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right)$

01.14.27.0165.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - \sin^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) /; |\arg(z)| < \pi$$

01.14.27.0166.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -\sin^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0167.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \sin^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0168.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{1}{2}\sqrt{z}\sqrt{\frac{1}{z}}\,\pi - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\,\sin^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right)$

01.14.27.0169.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2} - \sin^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) \;/;\; |\arg(z)| < \pi$$

01.14.27.0170.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \sin^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0171.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\sqrt{-z}\sqrt{-z-1}}{\sqrt{z}}\sqrt{\frac{1}{z+1}}\,\sin^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) + \frac{\pi}{2}\sqrt{\frac{1}{z}}\sqrt{z}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\sqrt{\frac{z}{z+1}}\right)$

01.14.27.0172.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2} - \sin^{-1}\left(\sqrt{\frac{z}{z+1}}\right) \;/;\; |\arg(z)| < \pi$$

01.14.27.0173.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -\sin^{-1}\left(\sqrt{\frac{z}{z+1}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0174.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \sin^{-1}\left(\sqrt{\frac{z}{z+1}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0175.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{1}{2}\sqrt{z}\sqrt{\frac{1}{z}}\,\pi - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\,\sin^{-1}\left(\sqrt{\frac{z}{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\sqrt{\sqrt{1+z}+1} \Big/ \left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0176.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == 2\sin^{-1}\left(\frac{\sqrt{1+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) - \frac{\pi}{2} \;/;\; z \notin (-1, 0)$$

01.14.27.0177.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == 2\sin^{-1}\left(\frac{\sqrt{1+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) - \frac{3\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0178.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z}}\,\sqrt{\frac{z}{z+1}} - 2\right) + 2\sin^{-1}\left(\frac{\sqrt{\sqrt{z+1}+1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\sqrt{\sqrt{1+z}-1}\Big/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0179.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2} - 2\sin^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) \;/;\; z \notin (-1, 0)$$

01.14.27.0180.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -\frac{\pi}{2} - 2\sin^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0181.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2}\sqrt{\frac{z+1}{z}}\,\sqrt{\frac{z}{z+1}} - 2\sin^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\sqrt{\left(\sqrt{1+z}+1\right)\Big/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.0182.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == 2\sin^{-1}\left(\sqrt{\frac{\sqrt{1+z}+1}{2\sqrt{1+z}}}\right) - \frac{\pi}{2} \;/;\; z \notin (-1, 0)$$

01.14.27.0183.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == 2\sin^{-1}\left(\sqrt{\frac{\sqrt{1+z}+1}{2\sqrt{1+z}}}\right) - \frac{3\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0184.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z}}\,\sqrt{\frac{z}{z+1}} - 2\right) + 2\sin^{-1}\left(\sqrt{\frac{\sqrt{1+z}+1}{2\sqrt{1+z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\sqrt{\left(\sqrt{1+z}-1\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.0185.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - 2\sin^{-1}\left(\sqrt{\frac{\sqrt{1+z}-1}{2\sqrt{1+z}}}\right) /; z \notin (-1, 0)$$

01.14.27.0186.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{\pi}{2} - 2\sin^{-1}\left(\sqrt{\frac{\sqrt{1+z}-1}{2\sqrt{1+z}}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0187.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\frac{\pi}{2} - 2\sin^{-1}\left(\sqrt{\frac{\sqrt{1+z}-1}{2\sqrt{1+z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\sqrt{\sqrt{1+z}+\sqrt{z}}\Big/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0188.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \pi - 2\sin^{-1}\left(\frac{\sqrt{\sqrt{1+z}+\sqrt{z}}}{\sqrt{2}\,(1+z)^{1/4}}\right) /; |\arg(z)| < \pi$$

01.14.27.0189.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\sin^{-1}\left(\frac{\sqrt{\sqrt{1+z}+\sqrt{z}}}{\sqrt{2}\,(1+z)^{1/4}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0190.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\sin^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) - \pi /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0191.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(-\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} + 2\sqrt{\frac{1}{z}}\sqrt{z} + 1\right) - 2\sqrt{z+1}\sqrt{\frac{1}{z+1}}\sin^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\sqrt{\sqrt{1+z}-\sqrt{z}}\Big/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0192.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\sin^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /; z \notin (-1, 0)$$

01.14.27.0193.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == 2\sin^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\sqrt[4]{z+1}}\right) - \pi \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0194.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == 2\sin^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\sqrt[4]{z+1}}\right) - \frac{\pi}{2}\left(1 - \sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\sqrt{\left(\sqrt{1+z}+\sqrt{z}\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.0195.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \pi - 2\sin^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right) \;/;\; |\arg(z)| < \pi$$

01.14.27.0196.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -2\sin^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right) \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0197.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == 2\sin^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right) - \pi \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0198.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2}\left(-\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} + 2\sqrt{\frac{1}{z}}\sqrt{z} + 1\right) - 2\sqrt{z+1}\sqrt{\frac{1}{z+1}}\sin^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\sqrt{\left(\sqrt{1+z}-\sqrt{z}\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.0199.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == 2\sin^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right) \;/;\; |\arg(z)| < \pi$$

01.14.27.0200.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == 2\sin^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right) - \pi \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0201.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -2\sin^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0202.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z}}\,\sqrt{\frac{z}{z+1}}-1\right)+2\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\sin^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$ and $\sin^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0203.01

$$\tan^{-1}\left(\sqrt{z-1}\right) == \frac{\pi}{2}-\sin^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$ and $\sin^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0204.01

$$\tan^{-1}\left(\sqrt{z-1}\right) == \frac{\pi}{2}-\sin^{-1}\left(\sqrt{\frac{1}{z}}\right)\ /;\ |\arg(z)| < \pi$$

01.14.27.0205.01

$$\tan^{-1}\left(\sqrt{z-1}\right) == \frac{\pi}{2}+\sin^{-1}\left(\sqrt{\frac{1}{z}}\right)\ /;\ (z \in \mathbb{R} \land z < 0)$$

01.14.27.0206.01

$$\tan^{-1}\left(\sqrt{z-1}\right) == \frac{\pi}{2}-\sqrt{z}\,\sqrt{\frac{1}{z}}\,\sin^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$ and $\sin^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0207.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) == \sin^{-1}\left(\frac{1}{\sqrt{z}}\right)\ /;\ z \notin (0,\ 1)$$

01.14.27.0208.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) == \sin^{-1}\left(\frac{1}{\sqrt{z}}\right)-\pi\ /;\ (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0209.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) == \frac{\pi}{2}\left(\sqrt{\frac{z-1}{z}}\,\sqrt{\frac{z}{z-1}}-1\right)+\sin^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$ and $\sin^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0210.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \sin^{-1}\left(\sqrt{\frac{1}{z}}\right) /; z \notin (-\infty, 1)$$

01.14.27.0211.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \sin^{-1}\left(\sqrt{\frac{1}{z}}\right) - \pi /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0212.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = -\sin^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0213.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}} - 1\right) + \sqrt{\frac{1}{z}}\sqrt{z}\sin^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$ and $\sin^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0214.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \sin^{-1}\left(\frac{1}{\sqrt{z}}\right) /; z \notin (-\infty, 1)$$

01.14.27.0215.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \pi - \sin^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0216.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = -\sin^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0217.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \sqrt{z-1}\sqrt{\frac{1}{z-1}}\sin^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2}\left(\sqrt{-z}\sqrt{-\frac{1}{z}}\sqrt{1-z}\sqrt{\frac{1}{1-z}} - 1\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$ and $\sin^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0218.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \sin^{-1}\left(\sqrt{\frac{1}{z}}\right) /; z \notin (0, 1)$$

01.14.27.0219.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \pi - \sin^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0220.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \sqrt{\frac{z-1}{z}} \sqrt{\frac{z}{z-1}} \sin^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2}\left(\sqrt{\frac{z-1}{z}} \sqrt{\frac{z}{z-1}} - 1\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$ and $\sin^{-1}\left(\sqrt{z}\right)$

01.14.27.0221.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \frac{\pi}{2} - \sin^{-1}\left(\sqrt{z}\right) /; |\arg(z)| < \pi$$

01.14.27.0222.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = -\frac{\pi}{2} - \sin^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0223.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \frac{\pi}{2} \sqrt{z} \sqrt{\frac{1}{z}} - \sin^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$ and $\sin^{-1}\left(\sqrt{z}\right)$

01.14.27.0224.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \sin^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} /; z \notin (-\infty, 1)$$

01.14.27.0225.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \sin^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0226.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \frac{\pi}{2} - \sin^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0227.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \frac{\sqrt{z}\,\sqrt{z-1}}{\sqrt{1-z}\,\sqrt{-z}}\left(\frac{1}{2}\pi\sqrt{z}\,\sqrt{\frac{1}{z}} - \sin^{-1}\left(\sqrt{z}\right)\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$ and $\sin^{-1}\left(\sqrt{z}\right)$

01.14.27.0228.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \frac{\pi}{2} - \sin^{-1}\left(\sqrt{z}\right) /; \left|\arg(z)\right| < \pi$$

01.14.27.0229.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \sin^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0230.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \frac{\pi}{2} - \sqrt{z}\,\sqrt{\frac{1}{z}}\,\sin^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$ and $\sin^{-1}\left(\sqrt{z}\right)$

01.14.27.0231.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \sin^{-1}\left(\sqrt{z}\right) /; z \notin (1, \infty)$$

01.14.27.0232.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \sin^{-1}\left(\sqrt{z}\right) - \pi /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0233.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{\pi}{2}\left(\sqrt{1-z}\,\sqrt{\frac{1}{1-z}} - 1\right) + \sin^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$ and $\sin^{-1}\left(\sqrt{z}\right)$

01.14.27.0234.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = -\sin^{-1}\left(\sqrt{z}\right) /; z \notin (0, \infty)$$

01.14.27.0235.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \sin^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0236.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \pi - \sin^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0237.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\pi}{2}\left(1 - \sqrt{1-z}\sqrt{\frac{1}{1-z}}\right) + \frac{\sqrt{1-z}\sqrt{-z}}{\sqrt{z-1}\sqrt{z}}\sin^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$ and $\sin^{-1}\left(\sqrt{z}\right)$

01.14.27.0238.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \sin^{-1}\left(\sqrt{z}\right) /; z \notin (1, \infty)$$

01.14.27.0239.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \pi - \sin^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0240.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2}\left(1 - \sqrt{1-z}\sqrt{\frac{1}{1-z}}\right) + \sqrt{\frac{1}{1-z}}\sqrt{1-z}\sin^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+c\,z}}{\sqrt{1-c\,z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{1-z}}\right)$ and $\sin^{-1}(z)$

01.14.27.0241.01

$$\tan^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{1-z}}\right) = \frac{\pi}{4} + \frac{1}{2}\sin^{-1}(z) /; z \notin (1, \infty)$$

01.14.27.0242.01

$$\tan^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{1-z}}\right) = \frac{1}{2}\sin^{-1}(z) - \frac{3\pi}{4} \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0243.01

$$\tan^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{1-z}}\right) = \frac{\pi}{4}\left(2\sqrt{\frac{1}{1-z}}\sqrt{1-z} - 1\right) + \frac{1}{2}\sin^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right)$ and $\sin^{-1}(z)$

01.14.27.0244.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right) = \frac{\pi}{4} - \frac{1}{2}\sin^{-1}(z) \;/;\; z \notin (-\infty, -1)$$

01.14.27.0245.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right) = -\frac{1}{2}\sin^{-1}(z) - \frac{3\pi}{4} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0246.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z+1}}\right) = \frac{\pi}{4}\left(2\sqrt{\frac{1}{z+1}}\sqrt{z+1} - 1\right) - \frac{1}{2}\sin^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-1+c\,z}}{\sqrt{-1-c\,z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right)$ and $\sin^{-1}(z)$

01.14.27.0247.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = -\frac{\pi}{4} + \frac{1}{2}\sin^{-1}(z) \;/;\; z \notin (-\infty, 1)$$

01.14.27.0248.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{3\pi}{4} + \frac{1}{2}\sin^{-1}(z) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0249.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{\pi}{4} - \frac{1}{2}\sin^{-1}(z) \;/;\; (z \in \mathbb{R} \land -1 < z < 1)$$

01.14.27.0250.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{\sqrt{z-1}\sqrt{z+1}}{\sqrt{-z-1}\sqrt{1-z}}\left(\frac{\pi}{4}\left(2\sqrt{\frac{1}{z+1}}\sqrt{z+1} - 1\right) - \frac{1}{2}\sin^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right)$ and $\sin^{-1}(z)$

01.14.27.0251.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = -\frac{\pi}{4} - \frac{1}{2}\sin^{-1}(z) \;/;\; z \notin (-1, \infty)$$

01.14.27.0252.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{3\pi}{4} - \frac{1}{2}\sin^{-1}(z) \;/;\; (z \in \mathbb{R} \wedge z > 1)$$

01.14.27.0253.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{\pi}{4} + \frac{1}{2}\sin^{-1}(z) \;/;\; (z \in \mathbb{R} \wedge -1 < z < 1)$$

01.14.27.0254.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{\sqrt{-z-1}\,\sqrt{1-z}}{\sqrt{z-1}\,\sqrt{z+1}}\left(\frac{\pi}{4}\left(2\sqrt{\frac{1}{1-z}}\,\sqrt{1-z}-1\right)+\frac{1}{2}\sin^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1+c z}{1-c z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right)$ and $\sin^{-1}(z)$

01.14.27.0255.01

$$\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right) = \frac{\pi}{4} + \frac{1}{2}\sin^{-1}(z) \;/;\; z \notin (1, \infty)$$

01.14.27.0256.01

$$\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right) = \frac{3\pi}{4} - \frac{1}{2}\sin^{-1}(z) \;/;\; (z \in \mathbb{R} \wedge z > 1)$$

01.14.27.0257.01

$$\tan^{-1}\left(\sqrt{\frac{z+1}{1-z}}\right) = \frac{\pi}{4}\left(2-\sqrt{1-z}\,\sqrt{\frac{1}{1-z}}\right)+\frac{1}{2}\sqrt{\frac{1}{1-z}}\,\sqrt{1-z}\,\sin^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right)$ and $\sin^{-1}(z)$

01.14.27.0258.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = \frac{\pi}{4} - \frac{1}{2}\sin^{-1}(z) \;/;\; z \notin (-\infty, -1)$$

01.14.27.0259.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = \frac{3\pi}{4} + \frac{1}{2}\sin^{-1}(z) \;/;\; (z \in \mathbb{R} \wedge z < -1)$$

01.14.27.0260.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z+1}}\right) = \frac{\pi}{4}\left(2-\sqrt{z+1}\sqrt{\frac{1}{z+1}}\right) - \frac{1}{2}\sqrt{z+1}\sqrt{\frac{1}{z+1}}\sin^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{z^2-1}\right)$

Involving $\tan^{-1}\left(\sqrt{z^2-1}\right)$ and $\sin^{-1}\left(\frac{1}{z}\right)$

01.14.27.0261.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = \frac{\pi}{2} - \sin^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0262.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = \sin^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} /; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0263.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = \frac{\pi}{2} - \frac{\sqrt{z^2}}{z}\sin^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right)$ and $\sin^{-1}\left(\frac{1}{z}\right)$

01.14.27.0264.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \sin^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.0265.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = -\sin^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.0266.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \sin^{-1}\left(\frac{1}{z}\right) - \pi /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0267.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = -\pi - \sin^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0268.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \frac{\sqrt{z^2}}{z}\sin^{-1}\left(\frac{1}{z}\right) + \frac{\pi i}{2}\left(\frac{\sqrt{-z-1}}{\sqrt{z+1}} + \frac{\sqrt{z-1}}{\sqrt{1-z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right)$ and $\sin^{-1}\left(\frac{1}{z}\right)$

01.14.27.0269.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \sin^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} \leq \arg(z) < 0 \bigvee 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.0270.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = -\sin^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{2} \leq \arg(z) < \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.0271.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \pi - \sin^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0272.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \pi + \sin^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0273.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \sqrt{z^2-1}\sqrt{\frac{1}{z^2-1}}\left(\frac{\sqrt{z^2}}{z}\sin^{-1}\left(\frac{1}{z}\right) + \frac{i\pi}{2}\left(\frac{\sqrt{-z-1}}{\sqrt{z+1}} + \frac{\sqrt{z-1}}{\sqrt{1-z}}\right)\right)$$

Involving $\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)$

Involving $\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)$ and $\sin^{-1}\left(\frac{1}{z}\right)$

01.14.27.0274.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = \frac{\pi}{2} - \sin^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0275.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = -\frac{\pi}{2} - \sin^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0276.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = \frac{\pi\sqrt{z^2}}{2\,z} - \sin^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)$ and $\sin^{-1}(z)$

01.14.27.0277.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = \sin^{-1}(z) /; z \notin (1, \infty) \bigwedge z \notin (-\infty, -1)$$

01.14.27.0278.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = \pi + \sin^{-1}(z) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0279.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = -\pi + \sin^{-1}(z) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0280.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = \sin^{-1}(z) + \frac{\pi}{2}\left(\sqrt{\frac{1}{1-z}}\,\sqrt{1-z} - \sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)$ and $\sin^{-1}(z)$

01.14.27.0281.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = \sin^{-1}(z) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0282.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = -\sin^{-1}(z) /; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0283.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = -\pi - \sin^{-1}(z) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0284.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = -\pi + \sin^{-1}(z) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0285.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = \frac{z}{\sqrt{z^2}}\left(\frac{\pi}{2}\left(\sqrt{\frac{1}{1-z}}\sqrt{1-z} - \sqrt{\frac{1}{z+1}}\sqrt{z+1}\right) + \sin^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right)$ and $\sin^{-1}(z)$

01.14.27.0286.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = -\sin^{-1}(z) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0287.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \sin^{-1}(z) /; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0288.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \pi + \sin^{-1}(z) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0289.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \pi - \sin^{-1}(z) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0290.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \frac{z\sqrt{z^2-1}}{\sqrt{-z^2}\,\sqrt{1-z^2}}\left(\frac{\pi}{2}\left(\sqrt{\frac{1}{1-z}}\,\sqrt{1-z}-\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\right)+\sin^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right)$ and $\sin^{-1}(z)$

01.14.27.0291.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \sin^{-1}(z) \;/;\; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \le \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0292.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = -\sin^{-1}(z) \;/;\; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0293.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \pi + \sin^{-1}(z) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0294.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \pi - \sin^{-1}(z) \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0295.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \frac{\sqrt{1-z^2}}{z}\sqrt{\frac{z^2}{1-z^2}}\left(\frac{\pi}{2}\left(\sqrt{\frac{1}{1-z}}\,\sqrt{1-z}-\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\right)+\sin^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right)$ and $\sin^{-1}(z)$

01.14.27.0296.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right) = \frac{\pi}{2} - \sin^{-1}(z) \;/;\; -\frac{\pi}{2} \le \arg(z) < \frac{\pi}{2}$$

01.14.27.0297.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right) = -\sin^{-1}(z) - \frac{\pi}{2} /; \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.0298.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right) = \frac{\pi}{2} \sqrt{\frac{1}{z^2}}\, z - \sin^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right)$ and $\sin^{-1}(z)$

01.14.27.0299.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \frac{\pi}{2} - \sin^{-1}(z) /; \mathrm{Re}(z) > 0$$

01.14.27.0300.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \frac{\pi}{2} + \sin^{-1}(z) /; \mathrm{Re}(z) < 0$$

01.14.27.0301.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \sin^{-1}(z) - \frac{\pi}{2} /; (i\, z \in \mathbb{R} \wedge i\, z > 0)$$

01.14.27.0302.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = -\sin^{-1}(z) - \frac{\pi}{2} /; (i\, z \in \mathbb{R} \wedge i\, z < 0)$$

01.14.27.0303.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \frac{\pi}{2} \sqrt{\frac{1}{z^2}} \sqrt{z^2} - \frac{z \sin^{-1}(z)}{\sqrt{z^2}}$$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right)$ and $\sin^{-1}(z)$

01.14.27.0304.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \sin^{-1}(z) - \frac{\pi}{2} /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.0305.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = -\sin^{-1}(z) - \frac{\pi}{2} /; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.0306.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \sin^{-1}(z) + \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0) \lor (i\, z \in \mathbb{R} \land i\, z < 0)$$

01.14.27.0307.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \frac{\pi}{2} - \sin^{-1}(z) /; (z \in \mathbb{R} \land 0 < z < 1) \lor (i\, z \in \mathbb{R} \land i\, z > 0)$$

01.14.27.0308.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \frac{\sqrt{-z^2}}{\sqrt{z^2-1}} \sqrt{\frac{1}{z^2}-1} \left(\frac{\pi}{2} - z \sqrt{\frac{1}{z^2}} \sin^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right)$ and $\sin^{-1}(z)$

01.14.27.0309.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = \frac{\pi}{2} - \sin^{-1}(z) /; -\frac{\pi}{2} \le \arg(z) < \frac{\pi}{2}$$

01.14.27.0310.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = \sin^{-1}(z) + \frac{\pi}{2} /; \frac{\pi}{2} \le \arg(z) \le \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.0311.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = \frac{\pi}{2} - z \sqrt{\frac{1}{z^2}} \sin^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{1+c\sqrt{1-z^2}}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right)$ and $\sin^{-1}(z)$

01.14.27.0312.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right) = \frac{\pi}{2} - \frac{1}{2}\sin^{-1}(z) \;/;\; -\frac{\pi}{2} \le \arg(z) < \frac{\pi}{2}$$

01.14.27.0313.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right) = -\frac{\pi}{2} - \frac{1}{2}\sin^{-1}(z) \;/;\; \frac{\pi}{2} \le \arg(z) \le \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.0314.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right) = \frac{\pi z}{2}\sqrt{\frac{1}{z^2}} - \frac{1}{2}\sin^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{1-\sqrt{1-z^2}}{z}\right)$ and $\sin^{-1}(z)$

01.14.27.0315.01

$$\tan^{-1}\left(\frac{1-\sqrt{1-z^2}}{z}\right) = \frac{1}{2}\sin^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{z}{1+c\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{z}{1+\sqrt{1-z^2}}\right)$ and $\sin^{-1}(z)$

01.14.27.0316.01

$$\tan^{-1}\left(\frac{z}{1+\sqrt{1-z^2}}\right) = \frac{1}{2}\sin^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right)$ and $\sin^{-1}(z)$

01.14.27.0317.01

$$\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right) = \frac{\pi}{2} - \frac{1}{2}\sin^{-1}(z) \;/;\; -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.0318.01

$$\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right) = -\frac{\pi}{2} - \frac{1}{2}\sin^{-1}(z) \;/;\; \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.0319.01

$$\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right) = \frac{\pi z}{2}\sqrt{\frac{1}{z^2}} - \frac{1}{2}\sin^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{-2+z^2}\right)$

Involving $\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{-2+z^2}\right)$ and $\sin^{-1}\left(\frac{1}{z}\right)$

01.14.27.0320.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) = 2\sin^{-1}\left(\frac{1}{z}\right) \;/;\; \frac{\pi}{4} \leq |\arg(z)| < \frac{\pi}{2} \bigvee |z| > \sqrt{2} \bigwedge \operatorname{Re}(z) > 0$$

01.14.27.0321.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) = -2\sin^{-1}\left(\frac{1}{z}\right) \;/;\; \frac{\pi}{2} < |\arg(z)| \leq \frac{3\pi}{4} \bigvee |z| > \sqrt{2} \bigwedge \operatorname{Re}(z) < 0$$

01.14.27.0322.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) = \pi\left(\theta\left(\left|\sqrt{z^2-1}\right|-1\right)-1\right) + \frac{2\sqrt{z^2}}{z}\sin^{-1}\left(\frac{1}{z}\right)$$

01.14.27.0323.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) =$$

$$\frac{\pi}{2\sqrt{z^2-1}}\left((z^2-2)\sqrt{\frac{z^4}{z^2-1}}\sqrt{\frac{z^2-1}{z^4}}\sqrt{\frac{z^2-1}{(z^2-2)^2}} - \sqrt{1-\frac{1}{z^2}}\, z\left(\sqrt{\frac{1}{z^2}}\, z - \sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}} + \sqrt{\frac{i}{z}}\sqrt{-i z} - \sqrt{-\frac{i}{z}}\sqrt{i z} + \sqrt{1+\frac{1}{z}}\sqrt{\frac{z}{z+1}}\right)\right) + \frac{2z}{\sqrt{z^2-1}}\sqrt{1-\frac{1}{z^2}}\sin^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{-2+z^2}{2\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{-2+z^2}{2\sqrt{z^2-1}}\right)$ and $\sin^{-1}\left(\frac{1}{z}\right)$

01.14.27.0324.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = \frac{\pi}{2} - 2\sin^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \le \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.0325.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = \frac{\pi}{2} + 2\sin^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.0326.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = 2\sin^{-1}\left(\frac{1}{z}\right) + \frac{3\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0327.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = \frac{3\pi}{2} - 2\sin^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0328.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = \frac{\pi z}{2\sqrt{z^2-1}}\sqrt{1-\frac{1}{z^2}}\left(\sqrt{\frac{1}{z^2}}\, z - \sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}} + \sqrt{\frac{i}{z}}\sqrt{-i z} - \sqrt{-\frac{i}{z}}\sqrt{i z} + \sqrt{1+\frac{1}{z}}\sqrt{\frac{z}{z+1}}\right) - \frac{2z}{\sqrt{z^2-1}}\sqrt{1-\frac{1}{z^2}}\sin^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{2z\sqrt{1-z^2}}{1-2z^2}\right)$

Involving $\tan^{-1}\left(\frac{2z\sqrt{1-z^2}}{1-2z^2}\right)$ and $\sin^{-1}(z)$

01.14.27.0329.01

$$\tan^{-1}\left(\frac{2\,z\,\sqrt{1-z^2}}{1-2\,z^2}\right) = 2\sin^{-1}(z)\;/;\;\frac{\pi}{4} \leq |\arg(z)| < \frac{3\,\pi}{4}$$

01.14.27.0330.01

$$\tan^{-1}\left(\frac{2\,z\,\sqrt{1-z^2}}{1-2\,z^2}\right) = 2\sin^{-1}(z) - \frac{1}{2}\pi\left(\frac{\sqrt{z^2-1}\;z}{\sqrt{z^4-z^2}} + \sqrt{\frac{1}{z}}\sqrt{\frac{1}{\sqrt{2}\;z-1}}\sqrt{\sqrt{2}\;z-1}\sqrt{z} - \sqrt{-\frac{1}{z}}\sqrt{-z}\sqrt{-\sqrt{2}\;z-1}\sqrt{-\frac{1}{\sqrt{2}\;z+1}} + \frac{\sqrt{z^2}}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right)$ and $\sin^{-1}(z)$

01.14.27.0331.01

$$\tan^{-1}\left(\frac{1-2\,z^2}{2\,z\,\sqrt{1-z^2}}\right) = \frac{\pi}{2} - 2\sin^{-1}(z)\;/;\;-\frac{\pi}{2} \leq \arg(z) < 0 \bigvee 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0332.01

$$\tan^{-1}\left(\frac{1-2\,z^2}{2\,z\,\sqrt{1-z^2}}\right) = -\frac{\pi}{2} - 2\sin^{-1}(z)\;/;\;\frac{\pi}{2} \leq \arg(z) < 0 \bigvee -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0333.01

$$\tan^{-1}\left(\frac{1-2\,z^2}{2\,z\,\sqrt{1-z^2}}\right) = \frac{3\,\pi}{2} - 2\sin^{-1}(z)\;/;\;(z \in \mathbb{R} \land z > 1)$$

01.14.27.0334.01

$$\tan^{-1}\left(\frac{1-2\,z^2}{2\,z\,\sqrt{1-z^2}}\right) = -\frac{3\,\pi}{2} - 2\sin^{-1}(z)\;/;\;(z \in \mathbb{R} \land z < -1)$$

01.14.27.0335.01

$$\tan^{-1}\left(\frac{1-2\,z^2}{2\,z\,\sqrt{1-z^2}}\right) = \frac{1}{2}\left(-\sqrt{\frac{1}{1-z}}\sqrt{1-z} + \sqrt{\frac{1}{z+1}}\sqrt{z+1} - \sqrt{-i\,z}\sqrt{\frac{i}{z}} + \sqrt{-\frac{i}{z}}\sqrt{i\,z} + \frac{\sqrt{z^2}}{z}\right)\pi - 2\sin^{-1}(z)$$

Involving $\cos^{-1}$

Involving $\tan^{-1}(z)$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\frac{2z}{1+z^2}\right)$

01.14.27.0336.01

$$\tan^{-1}(z) = \frac{1}{2}\left(\frac{\pi}{2} - \cos^{-1}\left(\frac{2z}{z^2+1}\right)\right) /; |z| < 1$$

01.14.27.0337.01

$$\tan^{-1}(z) = \frac{\pi}{4} + \frac{1}{2}\cos^{-1}\left(\frac{2z}{z^2+1}\right) /; |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0338.01

$$\tan^{-1}(z) = \frac{1}{2}\cos^{-1}\left(\frac{2z}{z^2+1}\right) - \frac{3\pi}{4} /; |z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}\right)$$

01.14.27.0339.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\frac{\sqrt{z^2}}{z} - \frac{1}{2}\right) + \frac{1}{2}\cos^{-1}\left(\frac{2z}{z^2+1}\right) /; |z| > 1$$

01.14.27.0340.01

$$\tan^{-1}(z) = \frac{\pi}{4}\left(\frac{\sqrt{z^2}}{z} - \frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\left(\frac{\sqrt{z^2}}{z} - 1\right)\right) - \frac{(1-z)}{2(1+z)}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\cos^{-1}\left(\frac{2z}{z^2+1}\right) /; |z| \neq 1$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\frac{1-z^2}{1+z^2}\right)$

01.14.27.0341.01

$$\tan^{-1}(z) = \frac{1}{2}\cos^{-1}\left(\frac{1-z^2}{1+z^2}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0342.01

$$\tan^{-1}(z) = -\frac{1}{2}\cos^{-1}\left(\frac{1-z^2}{1+z^2}\right) /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0343.01

$$\tan^{-1}(z) = -\frac{1}{2}\cos^{-1}\left(\frac{1-z^2}{1+z^2}\right) + \pi /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.0344.01

$$\tan^{-1}(z) = -\pi + \frac{1}{2}\cos^{-1}\left(\frac{1-z^2}{1+z^2}\right) /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.0345.01

$$\tan^{-1}(z) = \frac{\pi}{4}\left(\sqrt{\frac{1}{1-iz}}\sqrt{1-iz} - \sqrt{iz+1}\sqrt{\frac{1}{iz+1}} + \frac{\sqrt{z^2}}{z}\right) + \frac{\sqrt{z^2}\sqrt{z^2+1}}{2z}\sqrt{\frac{1}{z^2+1}}\left(-\frac{\pi}{2} + \cos^{-1}\left(\frac{1-z^2}{1+z^2}\right)\right)$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\frac{z^2-1}{z^2+1}\right)$

01.14.27.0346.01

$$\tan^{-1}(z) = -\frac{1}{2}\cos^{-1}\left(\frac{z^2-1}{z^2+1}\right)+\frac{\pi}{2} /; \operatorname{Re}(z)>0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0347.01

$$\tan^{-1}(z) = \frac{1}{2}\cos^{-1}\left(\frac{z^2-1}{z^2+1}\right)-\frac{\pi}{2} /; \operatorname{Re}(z)<0 \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0348.01

$$\tan^{-1}(z) = \frac{\pi}{2}+\frac{1}{2}\cos^{-1}\left(\frac{z^2-1}{z^2+1}\right) /; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0349.01

$$\tan^{-1}(z) = -\frac{\pi}{2}-\frac{1}{2}\cos^{-1}\left(\frac{z^2-1}{z^2+1}\right) /; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0350.01

$$\tan^{-1}(z) = \frac{\pi\sqrt{z^2}}{2\,z}-\frac{\sqrt{z^2}\,\sqrt{z^2+1}}{2\,z}\sqrt{\frac{1}{z^2+1}}\cos^{-1}\left(\frac{z^2-1}{z^2+1}\right)$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\frac{1}{\sqrt{z^2+1}}\right)$

01.14.27.0351.01

$$\tan^{-1}(z) = \cos^{-1}\left(\frac{1}{\sqrt{z^2+1}}\right) /; -\frac{\pi}{2} < \arg(z) \le \frac{\pi}{2}$$

01.14.27.0352.01

$$\tan^{-1}(z) = -\cos^{-1}\left(\frac{1}{\sqrt{z^2+1}}\right) /; \frac{\pi}{2} < \arg(z) \le \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2}$$

01.14.27.0353.01

$$\tan^{-1}(z) = \frac{\sqrt{z^2}}{z}\cos^{-1}\left(\frac{1}{\sqrt{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right)$

01.14.27.0354.01

$$\tan^{-1}(z) = \cos^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right) /; \operatorname{Re}(z)>0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0355.01

$$\tan^{-1}(z) = -\cos^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right) /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0356.01

$$\tan^{-1}(z) = \pi - \cos^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right) /; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0357.01

$$\tan^{-1}(z) = -\pi + \cos^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right) /; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0358.01

$$\tan^{-1}(z) = \frac{\pi\sqrt{z^2}}{2\,z}\left(1 - \sqrt{\frac{1}{z^2+1}}\,\sqrt{z^2+1}\right) + \frac{\sqrt{z^2+1}\,\sqrt{z^2}}{z}\,\sqrt{\frac{1}{z^2+1}}\,\cos^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\frac{z}{\sqrt{1+z^2}}\right)$

01.14.27.0359.01

$$\tan^{-1}(z) = \frac{\pi}{2} - \cos^{-1}\left(\frac{z}{\sqrt{z^2+1}}\right) /; \operatorname{Re}(z) \neq 0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 1)$$

01.14.27.0360.01

$$\tan^{-1}(z) = \frac{\pi}{2} + \cos^{-1}\left(\frac{z}{\sqrt{z^2+1}}\right) /; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0361.01

$$\tan^{-1}(z) = \cos^{-1}\left(\frac{z}{\sqrt{z^2+1}}\right) - \frac{3\,\pi}{2} /; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0362.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{\frac{1}{z^2+1}}\,\sqrt{z^2+1} + \sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}} - \sqrt{i\,z+1}\,\sqrt{\frac{1}{i\,z+1}}\right) - \sqrt{\frac{1}{z^2+1}}\,\sqrt{z^2+1}\,\cos^{-1}\left(\frac{z}{\sqrt{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1+z^2}}\right)$

01.14.27.0363.01

$$\tan^{-1}(z) = \frac{\pi}{2} - \cos^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{z^2+1}}\right) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0364.01

$$\tan^{-1}(z) = \cos^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{z^2+1}}\right) - \frac{\pi}{2} \;/;\; \text{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0365.01

$$\tan^{-1}(z) = \frac{\pi}{2} + \cos^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{z^2+1}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0366.01

$$\tan^{-1}(z) = -\cos^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{z^2+1}}\right) - \frac{\pi}{2} \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0367.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\frac{1+z^2}{z}\sqrt{\frac{1}{1+z^2}}\sqrt{\frac{z^2}{1+z^2}} + \sqrt{1-i\,z}\sqrt{\frac{1}{1-i\,z}} - \sqrt{i\,z+1}\sqrt{\frac{1}{i\,z+1}}\right) - \frac{z^2+1}{z}\sqrt{\frac{1}{z^2+1}}\sqrt{\frac{z^2}{z^2+1}}\cos^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-1-z^2}}\right)$

01.14.27.0368.01

$$\tan^{-1}(z) = \frac{\pi}{2} - \cos^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-1-z^2}}\right) \;/;\; \text{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0369.01

$$\tan^{-1}(z) = \cos^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-1-z^2}}\right) - \frac{\pi}{2} \;/;\; \text{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0370.01

$$\tan^{-1}(z) = \frac{\pi}{2} + \cos^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-1-z^2}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0371.01

$$\tan^{-1}(z) = -\frac{\pi}{2} - \cos^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-1-z^2}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0372.01

$$\tan^{-1}(z) = \frac{1}{2}\left(\sqrt{\frac{1}{z^2}}\,z + \sqrt{\frac{1}{1-i\,z}}\sqrt{1-i\,z} - \sqrt{i\,z+1}\sqrt{\frac{1}{i\,z+1}}\right)\pi - z\sqrt{\frac{1}{z^2}}\cos^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-z^2-1}}\right)$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\sqrt{\frac{z^2}{z^2+1}}\right)$

01.14.27.0373.01

$$\tan^{-1}(z) = \frac{\pi}{2} - \cos^{-1}\left(\sqrt{\frac{z^2}{z^2+1}}\right) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0374.01

$$\tan^{-1}(z) = \cos^{-1}\left(\sqrt{\frac{z^2}{z^2+1}}\right) - \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0375.01

$$\tan^{-1}(z) = \frac{\pi}{2} + \cos^{-1}\left(\sqrt{\frac{z^2}{z^2+1}}\right) /; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0376.01

$$\tan^{-1}(z) = -\frac{\pi}{2} - \cos^{-1}\left(\sqrt{\frac{z^2}{z^2+1}}\right) /; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0377.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\frac{\sqrt{z^2}}{z}\sqrt{\frac{1}{1+z^2}}\sqrt{1+z^2} + \sqrt{1-i\,z}\sqrt{\frac{1}{1-i\,z}} - \sqrt{i\,z+1}\sqrt{\frac{1}{i\,z+1}}\right) - \frac{\sqrt{z^2}}{z}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\cos^{-1}\left(\sqrt{\frac{z^2}{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\sqrt{\sqrt{1+z^2}+1} \Big/ \left(\sqrt{2}\left(1+z^2\right)^{1/4}\right)\right)$

01.14.27.0378.01

$$\tan^{-1}(z) = 2\cos^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}+1}}{\sqrt{2}\left(1+z^2\right)^{1/4}}\right) /; -\frac{\pi}{2} < \arg(z) \le \frac{\pi}{2}$$

01.14.27.0379.01

$$\tan^{-1}(z) = -2\cos^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}+1}}{\sqrt{2}\left(1+z^2\right)^{1/4}}\right) /; \frac{\pi}{2} < \arg(z) \le \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2}$$

01.14.27.0380.01

$$\tan^{-1}(z) == \frac{2\sqrt{z^2}}{z}\cos^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}+1}}{\sqrt{2}\left(1+z^2\right)^{1/4}}\right)$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\sqrt{\sqrt{1+z^2}-1}\Big/\left(\sqrt{2}\left(1+z^2\right)^{1/4}\right)\right)$

01.14.27.0381.01

$$\tan^{-1}(z) == \pi - 2\cos^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}-1}}{\sqrt{2}\left(1+z^2\right)^{1/4}}\right) /; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0382.01

$$\tan^{-1}(z) == 2\cos^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}-1}}{\sqrt{2}\left(1+z^2\right)^{1/4}}\right) - \pi /; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0383.01

$$\tan^{-1}(z) == \frac{\sqrt{z^2}}{z}\left(\pi - 2\cos^{-1}\left(\frac{\sqrt{\sqrt{z^2+1}-1}}{\sqrt{2}\sqrt[4]{z^2+1}}\right)\right)$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\sqrt{\left(\sqrt{1+z^2}+1\right)\Big/\left(2\sqrt{1+z^2}\right)}\right)$

01.14.27.0384.01

$$\tan^{-1}(z) == 2\cos^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}+1}{2\sqrt{z^2+1}}}\right) /; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0385.01

$$\tan^{-1}(z) == -2\cos^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}+1}{2\sqrt{z^2+1}}}\right) /; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0386.01

$$\tan^{-1}(z) == 2\frac{\sqrt{z^2}}{z}\cos^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}+1}{2\sqrt{z^2+1}}}\right)$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\sqrt{\left(\sqrt{1+z^2}-1\right)\Big/\left(2\sqrt{1+z^2}\right)}\right)$

01.14.27.0387.01

$$\tan^{-1}(z) = \pi - 2\cos^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-1}{2\sqrt{z^2+1}}}\right) /; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0388.01

$$\tan^{-1}(z) = 2\cos^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-1}{2\sqrt{z^2+1}}}\right) - \pi /; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0389.01

$$\tan^{-1}(z) = \frac{\sqrt{z^2}}{z}\left(\pi - 2\cos^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-1}{2\sqrt{z^2+1}}}\right)\right)$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\sqrt{\sqrt{1+z^2}+z}\Big/\left(\sqrt{2}\left(1+z^2\right)^{1/4}\right)\right)$

01.14.27.0390.01

$$\tan^{-1}(z) = -2\cos^{-1}\left(\frac{\sqrt{z+\sqrt{z^2+1}}}{\sqrt{2}\sqrt[4]{z^2+1}}\right) + \frac{\pi}{2} /; i z \notin (-\infty, -1)$$

01.14.27.0391.01

$$\tan^{-1}(z) = \frac{\pi}{2} + 2\cos^{-1}\left(\frac{\sqrt{z+\sqrt{z^2+1}}}{\sqrt{2}\sqrt[4]{z^2+1}}\right) /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.0392.01

$$\tan^{-1}(z) = \frac{\pi}{2} - 2\sqrt{i z+1}\sqrt{\frac{1}{i z+1}}\cos^{-1}\left(\frac{\sqrt{z+\sqrt{z^2+1}}}{\sqrt{2}\sqrt[4]{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\sqrt{\sqrt{1+z^2}-z}\Big/\left(\sqrt{2}\left(1+z^2\right)^{1/4}\right)\right)$

01.14.27.0393.01

$$\tan^{-1}(z) = 2\cos^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}-z}}{\sqrt{2}\,(1+z^2)^{1/4}}\right) - \frac{\pi}{2} \;/;\; i\,z \notin (1, \infty)$$

01.14.27.0394.01

$$\tan^{-1}(z) = -\frac{\pi}{2} - 2\cos^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}-z}}{\sqrt{2}\,(1+z^2)^{1/4}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0395.01

$$\tan^{-1}(z) = 2\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}}\,\cos^{-1}\left(\frac{\sqrt{\sqrt{z^2+1}-z}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) - \frac{\pi}{2}$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\sqrt{\left(\sqrt{1+z^2}+z\right)\Big/\left(2\sqrt{1+z^2}\right)}\right)$

01.14.27.0396.01

$$\tan^{-1}(z) = -2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z^2}+z}{2\sqrt{1+z^2}}}\right) + \frac{\pi}{2} \;/;\; i\,z \notin (-\infty, -1) \bigwedge i\,z \notin (1, \infty)$$

01.14.27.0397.01

$$\tan^{-1}(z) = \frac{\pi}{2} + 2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z^2}+z}{2\sqrt{1+z^2}}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0398.01

$$\tan^{-1}(z) = -\frac{3\pi}{2} + 2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z^2}+z}{2\sqrt{1+z^2}}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0399.01

$$\tan^{-1}(z) = \left(\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}} - \frac{1}{2}\right)\pi - 2\sqrt{z^2+1}\,\sqrt{\frac{1}{z^2+1}}\,\cos^{-1}\left(\sqrt{\frac{z+\sqrt{z^2+1}}{2\sqrt{z^2+1}}}\right)$$

Involving $\tan^{-1}(z)$ and $\cos^{-1}\left(\sqrt{\left(\sqrt{1+z^2}-z\right)\Big/\left(2\sqrt{1+z^2}\right)}\right)$

01.14.27.0400.01

$$\tan^{-1}(z) == 2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z^2}-z}{2\sqrt{1+z^2}}}\right)-\frac{\pi}{2}\ /;\ i\,z\notin(-\infty,-1)\bigwedge i\,z\notin(1,\infty)$$

01.14.27.0401.01

$$\tan^{-1}(z) == -\frac{\pi}{2}-2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z^2}-z}{2\sqrt{1+z^2}}}\right)\ /;\ (i\,z\in\mathbb{R}\land i\,z>1)$$

01.14.27.0402.01

$$\tan^{-1}(z) == \frac{3\pi}{2}-2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z^2}-z}{2\sqrt{1+z^2}}}\right)\ /;\ (i\,z\in\mathbb{R}\land i\,z<-1)$$

01.14.27.0403.01

$$\tan^{-1}(z) == 2\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\cos^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-z}{2\sqrt{z^2+1}}}\right)-\left(\sqrt{i\,z+1}\sqrt{\frac{1}{i\,z+1}}-\frac{1}{2}\right)\pi$$

Involving $\tan^{-1}(\sqrt{z})$

Involving $\tan^{-1}(\sqrt{z})$ and $\sin^{-1}\left(\frac{1-z}{1+z}\right)$

01.14.27.0404.01

$$\tan^{-1}(\sqrt{z}) == \frac{1}{2}\cos^{-1}\left(\frac{1-z}{1+z}\right)\ /;\ z\notin(-\infty,-1)$$

01.14.27.0405.01

$$\tan^{-1}(\sqrt{z}) == \pi-\frac{1}{2}\cos^{-1}\left(\frac{1-z}{1+z}\right)\ /;\ (z\in\mathbb{R}\land z<-1)$$

01.14.27.0406.01

$$\tan^{-1}(\sqrt{z}) == \frac{1}{2}\pi\left(1-\sqrt{z+1}\sqrt{\frac{1}{z+1}}\right)+\frac{1}{2}\sqrt{\frac{1}{z+1}}\sqrt{z+1}\cos^{-1}\left(\frac{1-z}{1+z}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cos^{-1}\left(\frac{z-1}{z+1}\right)$

01.14.27.0407.01

$$\tan^{-1}(\sqrt{z}) == -\frac{1}{2}\cos^{-1}\left(\frac{z-1}{z+1}\right)+\frac{\pi}{2}\ /;\ z\notin(-\infty,-1)$$

01.14.27.0408.01

$$\tan^{-1}(\sqrt{z}) == \frac{\pi}{2}+\frac{1}{2}\cos^{-1}\left(\frac{z-1}{z+1}\right)\ /;\ (z\in\mathbb{R}\land z<-1)$$

01.14.27.0409.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} - \frac{1}{2}\sqrt{z+1}\sqrt{\frac{1}{z+1}}\cos^{-1}\left(\frac{z-1}{z+1}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cos^{-1}\left(\frac{2\sqrt{z}}{1+z}\right)$

01.14.27.0410.01

$$\tan^{-1}(\sqrt{z}) = \frac{1}{2}\left(\frac{\pi}{2} - \cos^{-1}\left(\frac{2\sqrt{z}}{z+1}\right)\right) /; |z| < 1$$

01.14.27.0411.01

$$\tan^{-1}(\sqrt{z}) = \frac{1}{2}\left(\frac{\pi}{2} + \cos^{-1}\left(\frac{2\sqrt{z}}{z+1}\right)\right) /; |z| > 1$$

01.14.27.0412.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{4} - \frac{1-z}{2(z+1)}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\cos^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) /; |z| \neq 1$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cos^{-1}\left(\frac{1}{\sqrt{z+1}}\right)$

01.14.27.0413.01

$$\tan^{-1}(\sqrt{z}) = \cos^{-1}\left(\frac{1}{\sqrt{z+1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cos^{-1}\left(\sqrt{\frac{1}{z+1}}\right)$

01.14.27.0414.01

$$\tan^{-1}(\sqrt{z}) = \cos^{-1}\left(\sqrt{\frac{1}{z+1}}\right) /; z \notin (-\infty, -1)$$

01.14.27.0415.01

$$\tan^{-1}(\sqrt{z}) = \pi - \cos^{-1}\left(\sqrt{\frac{1}{z+1}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0416.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2}\left(1 - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\right) + \sqrt{z+1}\sqrt{\frac{1}{z+1}}\cos^{-1}\left(\sqrt{\frac{1}{z+1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cos^{-1}\left(\frac{\sqrt{z}}{\sqrt{1+z}}\right)$

01.14.27.0417.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - \cos^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) /; z \notin (-\infty, -1)$$

01.14.27.0418.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} + \cos^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0419.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - \sqrt{\frac{1}{z+1}} \sqrt{z+1} \cos^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cos^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-1-z}}\right)$

01.14.27.0420.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - \cos^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) /; |\arg(z)| < \pi$$

01.14.27.0421.01

$$\tan^{-1}\left(\sqrt{z}\right) = \cos^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0422.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} + \cos^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0423.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}\left(1 - \sqrt{z+1} \sqrt{\frac{1}{z+1}} + \sqrt{\frac{1}{z}} \sqrt{z}\right) - \sqrt{\frac{1}{z}} \sqrt{z} \cos^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cos^{-1}\left(\sqrt{\frac{z}{z+1}}\right)$

01.14.27.0424.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - \cos^{-1}\left(\sqrt{\frac{z}{z+1}}\right) /; z \notin (-\infty, -1)$$

01.14.27.0425.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} + \cos^{-1}\left(\sqrt{\frac{z}{z+1}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0426.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - \sqrt{\frac{1}{z+1}} \sqrt{z+1} \cos^{-1}\left(\sqrt{\frac{z}{z+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cos^{-1}\left(\sqrt{\sqrt{1+z}+1} \Big/ \left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0427.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\cos^{-1}\left(\frac{\sqrt{\sqrt{z+1}+1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cos^{-1}\left(\sqrt{\sqrt{1+z}-1}\Big/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0428.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi - 2\cos^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cos^{-1}\left(\sqrt{\left(\sqrt{1+z}+1\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.0429.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\cos^{-1}\left(\sqrt{\frac{\sqrt{z+1}+1}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cos^{-1}\left(\sqrt{\left(\sqrt{1+z}-1\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.0430.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi - 2\cos^{-1}\left(\sqrt{\frac{\sqrt{z+1}-1}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cos^{-1}\left(\sqrt{\sqrt{1+z}+\sqrt{z}}\Big/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0431.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - 2\cos^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /;\ z \notin (-\infty, -1)$$

01.14.27.0432.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} + 2\cos^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /;\ (z \in \mathbb{R} \land z < -1)$$

01.14.27.0433.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - 2\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\cos^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cos^{-1}\left(\sqrt{\sqrt{1+z}-\sqrt{z}}\Big/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0434.01

$$\tan^{-1}(\sqrt{z}) = -\frac{\pi}{2} + 2\cos^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cos^{-1}\left(\sqrt{\left(\sqrt{1+z}+\sqrt{z}\right)\Big/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.0435.01

$$\tan^{-1}(\sqrt{z}) = -2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z}+\sqrt{z}}{2\sqrt{1+z}}}\right) + \frac{\pi}{2} \;/;\; z \notin (-\infty, -1)$$

01.14.27.0436.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} + 2\cos^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0437.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} - 2\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\cos^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cos^{-1}\left(\sqrt{\left(\sqrt{1+z}-\sqrt{z}\right)\Big/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.0438.01

$$\tan^{-1}(\sqrt{z}) = -\frac{\pi}{2} + 2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z}-\sqrt{z}}{2\sqrt{1+z}}}\right) \;/;\; z \notin (-\infty, -1)$$

01.14.27.0439.01

$$\tan^{-1}(\sqrt{z}) = \frac{3\pi}{2} - 2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z}-\sqrt{z}}{2\sqrt{1+z}}}\right) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0440.01

$$\tan^{-1}(\sqrt{z}) = \left(\frac{1}{2} - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right)\pi + 2\sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\,\cos^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\frac{1-z}{1+z}\right)$

01.14.27.0441.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - \frac{1}{2}\cos^{-1}\left(\frac{1-z}{1+z}\right) /; |\arg(z)| < \pi$$

01.14.27.0442.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{1}{2}\cos^{-1}\left(\frac{1-z}{1+z}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0443.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\cos^{-1}\left(\frac{1-z}{1+z}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0444.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\sqrt{z}\sqrt{\frac{1}{z}}\,\pi - \frac{z\sqrt{-z-1}}{2\sqrt{-z(z+1)}}\sqrt{\frac{1}{z}}\cos^{-1}\left(\frac{1-z}{1+z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\frac{z-1}{z+1}\right)$

01.14.27.0445.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\cos^{-1}\left(\frac{z-1}{z+1}\right) /; |\arg(z)| < \pi$$

01.14.27.0446.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\cos^{-1}\left(\frac{z-1}{z+1}\right) - \pi /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0447.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{1}{2}\cos^{-1}\left(\frac{z-1}{z+1}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0448.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 1\right) + \frac{z\sqrt{-z-1}}{2\sqrt{-z(z+1)}}\sqrt{\frac{1}{z}}\cos^{-1}\left(\frac{z-1}{z+1}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\frac{2\sqrt{z}}{1+z}\right)$

01.14.27.0449.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4} + \frac{1}{2}\cos^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) /; |z| < 1 \bigwedge z \notin (-1, 0)$$

01.14.27.0450.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\cos^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) - \frac{3\pi}{4} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0451.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{z}\sqrt{\frac{1}{z}} - \frac{1}{2}\right) + \frac{1}{2}\cos^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) /; |z| < 1$$

01.14.27.0452.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4} - \frac{1}{2}\cos^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) /; |z| > 1$$

01.14.27.0453.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4}\left(2\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 1\right) + \frac{1-z}{2(z+1)}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\cos^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\frac{1}{\sqrt{1+z}}\right)$

01.14.27.0454.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - \cos^{-1}\left(\frac{1}{\sqrt{1+z}}\right) /; z \notin (-1, 0)$$

01.14.27.0455.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\cos^{-1}\left(\frac{1}{\sqrt{z+1}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \wedge -1 < z < 0)$$

01.14.27.0456.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - \cos^{-1}\left(\frac{1}{\sqrt{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\sqrt{\frac{1}{1+z}}\right)$

01.14.27.0457.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - \cos^{-1}\left(\sqrt{\frac{1}{1+z}}\right) /; |\arg(z)| < \pi$$

01.14.27.0458.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\cos^{-1}\left(\sqrt{\frac{1}{z+1}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \wedge -1 < z < 0)$$

01.14.27.0459.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \cos^{-1}\left(\sqrt{\frac{1}{1+z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \wedge z < -1)$$

01.14.27.0460.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\sqrt{z}\sqrt{\frac{1}{z}}\,\pi - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\cos^{-1}\left(\sqrt{\frac{1}{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right)$

01.14.27.0461.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \cos^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) /; |\arg(z)| < \pi$$

01.14.27.0462.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \cos^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) - \pi /; (z \in \mathbb{R} \wedge -1 < z < 0)$$

01.14.27.0463.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\cos^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) /; (z \in \mathbb{R} \wedge z < -1)$$

01.14.27.0464.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\pi\left(\sqrt{z}\sqrt{\frac{1}{z}} - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\right) + \sqrt{\frac{1}{z+1}}\sqrt{z+1}\cos^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right)$

01.14.27.0465.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \cos^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) /; |\arg(z)| < \pi$$

01.14.27.0466.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\cos^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) /; (z \in \mathbb{R} \wedge z < 0)$$

01.14.27.0467.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{\sqrt{-z}\sqrt{-z-1}}{\sqrt{z}}\sqrt{\frac{1}{z+1}}\cos^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\sqrt{\frac{z}{z+1}}\right)$

01.14.27.0468.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \cos^{-1}\left(\sqrt{\frac{z}{z+1}}\right) /; |\arg(z)| < \pi$$

01.14.27.0469.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \cos^{-1}\left(\sqrt{\frac{z}{z+1}}\right) - \pi /; (z \in \mathbb{R} \wedge -1 < z < 0)$$

01.14.27.0470.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\cos^{-1}\left(\sqrt{\frac{z}{z+1}}\right) /; (z \in \mathbb{R} \wedge z < -1)$$

01.14.27.0471.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 1\right) + \sqrt{\frac{1}{z+1}}\sqrt{z+1}\cos^{-1}\left(\sqrt{\frac{z}{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\sqrt{\sqrt{1+z}+1}\Big/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0472.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\cos^{-1}\left(\frac{\sqrt{1+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) + \frac{\pi}{2} /; z \notin (-1, 0)$$

01.14.27.0473.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\cos^{-1}\left(\frac{\sqrt{1+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0474.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\cos^{-1}\left(\frac{\sqrt{\sqrt{z+1}+1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) + \frac{1}{2}\pi\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\sqrt{\sqrt{1+z}-1}\Big/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0475.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{\pi}{2} + 2\cos^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /; z \notin (-1, 0)$$

01.14.27.0476.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{3\pi}{2} + 2\cos^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0477.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - \pi + 2\cos^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\sqrt{\left(\sqrt{1+z}+1\right)\Big/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.0478.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z}+1}{2\sqrt{1+z}}}\right) + \frac{\pi}{2} /; z \notin (-1, 0)$$

01.14.27.0479.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z}+1}{2\sqrt{1+z}}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0480.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z}+1}{2\sqrt{1+z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\sqrt{\left(\sqrt{1+z}-1\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.0481.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{\pi}{2} + 2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z}-1}{2\sqrt{1+z}}}\right) /; z \notin (-1, 0)$$

01.14.27.0482.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{3\pi}{2} + 2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z}-1}{2\sqrt{1+z}}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0483.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \left(\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 2\right)\frac{\pi}{2} + 2\cos^{-1}\left(\sqrt{\frac{\sqrt{1+z}-1}{2\sqrt{1+z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\sqrt{\sqrt{1+z}+\sqrt{z}} \Big/ \left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0484.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\cos^{-1}\left(\frac{\sqrt{\sqrt{1+z}+\sqrt{z}}}{\sqrt{2}\,(1+z)^{1/4}}\right) /; |\arg(z)| < \pi$$

01.14.27.0485.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\cos^{-1}\left(\frac{\sqrt{\sqrt{1+z}+\sqrt{z}}}{\sqrt{2}\,(1+z)^{1/4}}\right) - \pi /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0486.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\cos^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0487.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 1\right) + 2\sqrt{\frac{1}{z+1}}\sqrt{z+1}\cos^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\sqrt{\sqrt{1+z}-\sqrt{z}} \Big/ \left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.0488.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \pi - 2\cos^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /;\ z \notin (-1, 0)$$

01.14.27.0489.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\cos^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0490.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z}{z+1}}\,\sqrt{\frac{z+1}{z}} + 1\right) - 2\cos^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\sqrt{\left(\sqrt{1+z}+\sqrt{z}\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.0491.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\cos^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right) /;\ |\arg(z)| < \pi$$

01.14.27.0492.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\cos^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right) - \pi /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0493.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\cos^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right) /;\ (z \in \mathbb{R} \land z < -1)$$

01.14.27.0494.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z}}\,\sqrt{\frac{z}{z+1}} - 1\right) + 2\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\cos^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\sqrt{\left(\sqrt{1+z}-\sqrt{z}\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.0495.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \pi - 2\cos^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right) /;\ |\arg(z)| < \pi$$

01.14.27.0496.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -2\cos^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0497.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == 2\cos^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right) - \pi /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0498.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{1}{2}\left(2\sqrt{\frac{1}{z+1}}\sqrt{z+1} + \sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 1\right)\pi - 2\sqrt{z+1}\sqrt{\frac{1}{z+1}}\cos^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$ and $\cos^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0499.01

$$\tan^{-1}\left(\sqrt{z-1}\right) == \cos^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$ and $\cos^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0500.01

$$\tan^{-1}\left(\sqrt{z-1}\right) == \cos^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.0501.01

$$\tan^{-1}\left(\sqrt{z-1}\right) == \pi - \cos^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0502.01

$$\tan^{-1}\left(\sqrt{z-1}\right) == \frac{\pi}{2}\left(1 - \sqrt{z}\sqrt{\frac{1}{z}}\right) + \sqrt{\frac{1}{z}}\sqrt{z}\cos^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$ and $\cos^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0503.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{\pi}{2} - \cos^{-1}\left(\frac{1}{\sqrt{z}}\right) /; z \notin (0, 1)$$

01.14.27.0504.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = -\cos^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0505.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{\pi}{2} \sqrt{\frac{z-1}{z}} \sqrt{\frac{z}{z-1}} - \cos^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$ and $\cos^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0506.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{\pi}{2} - \cos^{-1}\left(\sqrt{\frac{1}{z}}\right) /; z \notin (-\infty, 1)$$

01.14.27.0507.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = -\cos^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0508.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \cos^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0509.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{\pi}{2} \sqrt{z-1} \sqrt{\frac{1}{z-1}} - \sqrt{z} \sqrt{\frac{1}{z}} \cos^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$ and $\cos^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0510.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \frac{\pi}{2} - \cos^{-1}\left(\frac{1}{\sqrt{z}}\right) /; z \notin (-\infty, 1)$$

01.14.27.0511.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \frac{\pi}{2} + \cos^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0512.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \cos^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0513.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \frac{1}{2}\sqrt{z}\sqrt{\frac{1}{z}}\,\pi - \sqrt{z-1}\sqrt{\frac{1}{z-1}}\cos^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$ and $\cos^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0514.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \frac{\pi}{2} - \cos^{-1}\left(\sqrt{\frac{1}{z}}\right) \;/;\; z \notin (0, 1)$$

01.14.27.0515.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \cos^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0516.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \frac{\pi}{2} - \sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}}\cos^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$ and $\cos^{-1}\left(\sqrt{z}\right)$

01.14.27.0517.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \cos^{-1}\left(\sqrt{z}\right) \;/;\; |\arg(z)| < \pi$$

01.14.27.0518.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \cos^{-1}\left(\sqrt{z}\right) - \pi \;/;\; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0015.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \cos^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2}\left(1 - \sqrt{z}\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$ and $\cos^{-1}\left(\sqrt{z}\right)$

01.14.27.0519.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = -\cos^{-1}\left(\sqrt{z}\right) /; z \notin (-\infty, 1)$$

01.14.27.0520.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \pi - \cos^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \wedge z < 0)$$

01.14.27.0521.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \cos^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \wedge 0 < z < 1)$$

01.14.27.0522.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \frac{\sqrt{z}\sqrt{z-1}}{\sqrt{1-z}\sqrt{-z}}\left(\frac{\pi}{2}\left(\sqrt{z}\sqrt{\frac{1}{z}}-1\right)+\cos^{-1}\left(\sqrt{z}\right)\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$ and $\cos^{-1}\left(\sqrt{z}\right)$

01.14.27.0523.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \cos^{-1}\left(\sqrt{z}\right) /; |\arg(z)| < \pi$$

01.14.27.0524.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \pi - \cos^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \wedge z < 0)$$

01.14.27.0525.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \frac{\pi}{2}\left(1-\sqrt{z}\sqrt{\frac{1}{z}}\right)+\sqrt{\frac{1}{z}}\sqrt{z}\cos^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$ and $\cos^{-1}\left(\sqrt{z}\right)$

01.14.27.0526.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{\pi}{2} - \cos^{-1}\left(\sqrt{z}\right) /; z \notin (1, \infty)$$

01.14.27.0527.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = -\cos^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0528.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{\pi}{2} \sqrt{1-z} \sqrt{\frac{1}{1-z}} - \cos^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$ and $\cos^{-1}\left(\sqrt{z}\right)$

01.14.27.0529.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \cos^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} /; z \notin (0, \infty)$$

01.14.27.0530.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\pi}{2} - \cos^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0531.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\pi}{2} + \cos^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0532.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = -\frac{\sqrt{1-z}\,\sqrt{-z}}{\sqrt{z-1}\,\sqrt{z}} \cos^{-1}\left(\sqrt{z}\right) - \frac{\pi\sqrt{-z}}{2} \sqrt{-\frac{1}{z}}$$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$ and $\cos^{-1}\left(\sqrt{z}\right)$

01.14.27.0533.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2} - \cos^{-1}\left(\sqrt{z}\right) /; z \notin (1, \infty)$$

01.14.27.0534.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2} + \cos^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0535.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) == \frac{\pi}{2} - \sqrt{1-z}\,\sqrt{\frac{1}{1-z}}\,\cos^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+c\,z}}{\sqrt{1-c\,z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{1-z}}\right)$ and $\cos^{-1}(z)$

01.14.27.0536.01

$$\tan^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{1-z}}\right) == \frac{\pi}{2} - \frac{1}{2}\cos^{-1}(z) \;/;\; z \notin (1, \infty)$$

01.14.27.0537.01

$$\tan^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{1-z}}\right) == -\frac{1}{2}\cos^{-1}(z) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0538.01

$$\tan^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{1-z}}\right) == \frac{\pi}{2}\sqrt{\frac{1}{1-z}}\,\sqrt{1-z} - \frac{1}{2}\cos^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right)$ and $\cos^{-1}(z)$

01.14.27.0539.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right) == \frac{1}{2}\cos^{-1}(z) \;/;\; z \notin (-\infty, -1)$$

01.14.27.0540.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right) == \frac{1}{2}\cos^{-1}(z) - \pi \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0017.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right) == \frac{\pi}{2}\left(1 - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right) + \frac{1}{2}\cos^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-1+c\,z}}{\sqrt{-1-c\,z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{z-1}}\right)$ and $\cos^{-1}(z)$

01.14.27.0541.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) == -\frac{\pi}{2} + \frac{1}{2}\cos^{-1}(z) \;/;\; z \notin (-1, \infty)$$

01.14.27.0542.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{\pi}{2} + \frac{1}{2}\cos^{-1}(z) \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0543.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{\pi}{2} - \frac{1}{2}\cos^{-1}(z) \;/;\; (z \in \mathbb{R} \land -1 < z < 1)$$

01.14.27.0544.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{\sqrt{-z-1}\,\sqrt{1-z}}{\sqrt{z-1}\,\sqrt{z+1}}\left(\frac{\pi}{2}\sqrt{\frac{1}{1-z}}\,\sqrt{1-z} - \frac{1}{2}\cos^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right)$ and $\cos^{-1}(z)$

01.14.27.0545.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = -\frac{1}{2}\cos^{-1}(z) \;/;\; z \notin (-\infty, 1)$$

01.14.27.0546.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \pi - \frac{1}{2}\cos^{-1}(z) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0547.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{1}{2}\cos^{-1}(z) \;/;\; (z \in \mathbb{R} \land -1 < z < 1)$$

01.14.27.0548.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{\sqrt{z-1}\,\sqrt{z+1}}{\sqrt{-z-1}\,\sqrt{1-z}}\left(\frac{\pi}{2}\left(\sqrt{\frac{1}{z+1}}\,\sqrt{z+1} - 1\right) + \frac{1}{2}\cos^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1+c\,z}{1-c\,z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right)$ and $\cos^{-1}(z)$

01.14.27.0549.01

$$\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right) = \frac{\pi}{2} - \frac{1}{2}\cos^{-1}(z) \;/;\; z \notin (1, \infty)$$

01.14.27.0550.01

$$\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right) = \frac{\pi}{2} + \frac{1}{2}\cos^{-1}(z) \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0551.01

$$\tan^{-1}\left(\sqrt{\frac{z+1}{1-z}}\right) == \frac{\pi}{2} - \frac{1}{2}\sqrt{\frac{1}{1-z}}\sqrt{1-z}\cos^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right)$ and $\cos^{-1}(z)$

01.14.27.0552.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) == \frac{1}{2}\cos^{-1}(z) \;/;\; z \notin (-\infty, -1)$$

01.14.27.0553.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) == \pi - \frac{1}{2}\cos^{-1}(z) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0016.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) == \frac{\pi}{2}\left(1 - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\right) + \frac{1}{2}\sqrt{\frac{1}{z+1}}\sqrt{z+1}\cos^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{z^2-1}\right)$

Involving $\tan^{-1}\left(\sqrt{z^2-1}\right)$ and $\cos^{-1}\left(\frac{1}{z}\right)$

01.14.27.0554.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) == \cos^{-1}\left(\frac{1}{z}\right) \;/;\; -\frac{\pi}{2} < \arg(z) \le \frac{\pi}{2}$$

01.14.27.0555.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) == \pi - \cos^{-1}\left(\frac{1}{z}\right) \;/;\; \frac{\pi}{2} < \arg(z) \le \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2}$$

01.14.27.0556.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) == \frac{\pi}{2}\left(1 - \frac{\sqrt{z^2}}{z}\right) + \frac{\sqrt{z^2}}{z}\cos^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right)$ and $\cos^{-1}\left(\frac{1}{z}\right)$

01.14.27.0557.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \frac{\pi}{2} - \cos^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.0558.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \cos^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} /; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.0559.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = -\cos^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0560.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = -\frac{3\pi}{2} + \cos^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0561.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \frac{\sqrt{z^2}}{z}\left(\frac{\pi}{2} - \cos^{-1}\left(\frac{1}{z}\right)\right) + \frac{\pi i}{2}\left(\frac{\sqrt{-z-1}}{\sqrt{z+1}} + \frac{\sqrt{z-1}}{\sqrt{1-z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right)$ and $\cos^{-1}\left(\frac{1}{z}\right)$

01.14.27.0562.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \frac{\pi}{2} - \cos^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} \leq \arg(z) < 0 \bigvee 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.0563.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \cos^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} /; \frac{\pi}{2} \leq \arg(z) < \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.0564.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \frac{\pi}{2} + \cos^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0565.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \frac{3\pi}{2} - \cos^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0566.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \sqrt{z^2-1}\,\sqrt{\frac{1}{z^2-1}}\left(\frac{\sqrt{z^2}}{z}\left(\frac{\pi}{2}-\cos^{-1}\left(\frac{1}{z}\right)\right)+\frac{i\,\pi}{2}\left(\frac{\sqrt{-z-1}}{\sqrt{z+1}}+\frac{\sqrt{z-1}}{\sqrt{1-z}}\right)\right)$$

Involving $\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)$

Involving $\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)$ and $\cos^{-1}\left(\frac{1}{z}\right)$

01.14.27.0567.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = \cos^{-1}\left(\frac{1}{z}\right)\;/;\; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0568.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = \cos^{-1}\left(\frac{1}{z}\right) - \pi\;/;\; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0569.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = \frac{\pi}{2}\left(\frac{\sqrt{z^2}}{z}-1\right)+\cos^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)$ and $\cos^{-1}(z)$

01.14.27.0570.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = \frac{\pi}{2} - \cos^{-1}(z)\;/;\; z \notin (1, \infty) \bigwedge z \notin (-\infty, -1)$$

01.14.27.0571.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = \frac{3\pi}{2} - \cos^{-1}(z)\;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0572.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = -\frac{\pi}{2} - \cos^{-1}(z)\;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0573.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = -\cos^{-1}(z) + \frac{\pi}{2}\left(1 + \sqrt{\frac{1}{1-z}}\,\sqrt{1-z} - \sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)$ and $\cos^{-1}(z)$

01.14.27.0574.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = \frac{\pi}{2} - \cos^{-1}(z) \;/;\; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0575.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = \cos^{-1}(z) - \frac{\pi}{2} \;/;\; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0576.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = \cos^{-1}(z) - \frac{3\pi}{2} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0577.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = -\frac{\pi}{2} - \cos^{-1}(z) \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0578.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = \frac{z}{\sqrt{z^2}}\left(\frac{\pi}{2}\left(1 + \sqrt{\frac{1}{1-z}}\,\sqrt{1-z} - \sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\right) - \cos^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right)$ and $\cos^{-1}(z)$

01.14.27.0579.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \cos^{-1}(z) - \frac{\pi}{2} \;/;\; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0580.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \frac{\pi}{2} - \cos^{-1}(z) \;/;\; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0581.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \frac{3\pi}{2} - \cos^{-1}(z) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0582.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \frac{\pi}{2} + \cos^{-1}(z) \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0583.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \frac{z\sqrt{z^2-1}}{\sqrt{-z^2}\sqrt{1-z^2}}\left(\frac{\pi}{2}\left(1+\sqrt{\frac{1}{1-z}}\sqrt{1-z}-\sqrt{\frac{1}{z+1}}\sqrt{z+1}\right)-\cos^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right)$ and $\cos^{-1}(z)$

01.14.27.0584.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \frac{\pi}{2} - \cos^{-1}(z) \;/;\; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0585.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \cos^{-1}(z) - \frac{\pi}{2} \;/;\; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0586.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \frac{3\pi}{2} - \cos^{-1}(z) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0587.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \frac{\pi}{2} + \cos^{-1}(z) \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0588.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \frac{\sqrt{1-z^2}}{z}\sqrt{\frac{z^2}{1-z^2}}\left(\frac{\pi}{2}\left(1+\sqrt{\frac{1}{1-z}}\sqrt{1-z}-\sqrt{\frac{1}{z+1}}\sqrt{z+1}\right)-\cos^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right)$ and $\cos^{-1}(z)$

01.14.27.0589.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right) = \cos^{-1}(z) \;/;\; -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.0590.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right) = \cos^{-1}(z) - \pi \;/;\; \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.0018.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right) = \cos^{-1}(z) + \frac{\pi}{2}\left(\sqrt{\frac{1}{z^2}}\, z - 1\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right)$ and $\cos^{-1}(z)$

01.14.27.0591.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \cos^{-1}(z) \;/;\; \mathrm{Re}(z) > 0$$

01.14.27.0592.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \pi - \cos^{-1}(z) \;/;\; \mathrm{Re}(z) < 0$$

01.14.27.0593.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = -\cos^{-1}(z) \;/;\; (i\, z \in \mathbb{R} \land i\, z > 0)$$

01.14.27.0594.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \cos^{-1}(z) - \pi \;/;\; (i\,z \in \mathbb{R} \land i\,z < 0)$$

01.14.27.0595.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{1}{z^2}}\,\sqrt{z^2} - \frac{\sqrt{z^2}}{z}\right) + \frac{z}{\sqrt{z^2}}\cos^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right)$ and $\cos^{-1}(z)$

01.14.27.0596.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = -\cos^{-1}(z) \;/;\; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.0597.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \cos^{-1}(z) - \pi \;/;\; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.0598.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \pi - \cos^{-1}(z) \;/;\; (z \in \mathbb{R} \land -1 < z < 0) \lor (i\,z \in \mathbb{R} \land i\,z < 0)$$

01.14.27.0599.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \cos^{-1}(z) \;/;\; (z \in \mathbb{R} \land 0 < z < 1) \lor (i\,z \in \mathbb{R} \land i\,z > 0)$$

01.14.27.0600.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\sqrt{\frac{1}{z^2}-1}\left(\frac{\pi}{2}\left(1 - z\sqrt{\frac{1}{z^2}}\right) + \sqrt{\frac{1}{z^2}}\,z\cos^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right)$ and $\cos^{-1}(z)$

01.14.27.0601.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = \cos^{-1}(z) \; /; \; -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.0602.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = \pi - \cos^{-1}(z) \; /; \; \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.0603.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = \frac{\pi}{2}\left(1 - z\sqrt{\frac{1}{z^2}}\right) + \sqrt{\frac{1}{z^2}} \, z \cos^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{1+c\sqrt{1-z^2}}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right)$ and $\cos^{-1}(z)$

01.14.27.0604.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right) = \frac{\pi}{4} + \frac{1}{2}\cos^{-1}(z) \; /; \; -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.0605.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right) = \frac{1}{2}\cos^{-1}(z) - \frac{3\pi}{4} \; /; \; \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.0606.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right) = \frac{\pi}{2}\left(\sqrt{\frac{1}{z^2}} \, z - \frac{1}{2}\right) + \frac{1}{2}\cos^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{1-\sqrt{1-z^2}}{z}\right)$ and $\cos^{-1}(z)$

01.14.27.0607.01

$$\tan^{-1}\left(\frac{1-\sqrt{1-z^2}}{z}\right) = \frac{\pi}{4} - \frac{1}{2}\cos^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{z}{1+c\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{z}{1+\sqrt{1-z^2}}\right)$ and $\cos^{-1}(z)$

01.14.27.0608.01

$$\tan^{-1}\left(\frac{z}{1+\sqrt{1-z^2}}\right) = \frac{\pi}{4} - \frac{1}{2}\cos^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right)$ and $\cos^{-1}(z)$

01.14.27.0609.01

$$\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right) = \frac{\pi}{4} + \frac{1}{2}\cos^{-1}(z) /; -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.0610.01

$$\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right) = \frac{1}{2}\cos^{-1}(z) - \frac{3\pi}{4} /; \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.0611.01

$$\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{1}{z^2}}\, z - \frac{1}{2}\right) + \frac{1}{2}\cos^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{-2+z^2}\right)$

Involving $\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{-2+z^2}\right)$ and $\cos^{-1}\left(\frac{1}{z}\right)$

01.14.27.0612.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) = \pi - 2\cos^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{4} \leq |\arg(z)| < \frac{\pi}{2} \bigvee |z| > \sqrt{2} \bigwedge \operatorname{Re}(z) > 0$$

01.14.27.0613.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) = 2\cos^{-1}\left(\frac{1}{z}\right) - \pi /; \frac{\pi}{2} < |\arg(z)| \leq \frac{3\pi}{4} \bigvee |z| > \sqrt{2} \bigwedge \operatorname{Re}(z) < 0$$

01.14.27.0614.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) = \pi\left(\frac{\sqrt{z^2}}{z} + \theta\left(\left|\sqrt{z^2-1}\right| - 1\right) - 1\right) - \frac{2\sqrt{z^2}}{z}\cos^{-1}\left(\frac{1}{z}\right)$$

01.14.27.0615.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) = \frac{\pi}{2\sqrt{z^2-1}}\left(-\sqrt{1-\frac{1}{z^2}}\left(\sqrt{\frac{1}{z^2}}\,z-\sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}}+\sqrt{\frac{i}{z}}\sqrt{-i\,z}-\sqrt{-\frac{i}{z}}\sqrt{i\,z}+\sqrt{1+\frac{1}{z}}\sqrt{\frac{z}{z+1}}\right)z+2\sqrt{1-\frac{1}{z^2}}\,z+\sqrt{\frac{z^2-1}{z^4}}\left(z^2-2\right)\sqrt{\frac{z^2-1}{\left(z^2-2\right)^2}}\sqrt{\frac{z^4}{z^2-1}}\right)-\frac{2\,z}{\sqrt{z^2-1}}\sqrt{1-\frac{1}{z^2}}\cos^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{-2+z^2}{2\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{-2+z^2}{2\sqrt{z^2-1}}\right)$ and $\cos^{-1}\left(\frac{1}{z}\right)$

01.14.27.0616.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = -\frac{\pi}{2}+2\cos^{-1}\left(\frac{1}{z}\right)\ /;\ -\frac{\pi}{2}<\arg(z)<0\bigvee 0<\arg(z)\le\frac{\pi}{2}\bigvee(z\in\mathbb{R}\land z>1)$$

01.14.27.0617.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = \frac{3\pi}{2}-2\cos^{-1}\left(\frac{1}{z}\right)\ /;\ \frac{\pi}{2}<\arg(z)<\pi\bigvee -\pi<\arg(z)\le-\frac{\pi}{2}\bigvee(z\in\mathbb{R}\land z<-1)$$

01.14.27.0618.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = -2\cos^{-1}\left(\frac{1}{z}\right)+\frac{5\pi}{2}\ /;\ (z\in\mathbb{R}\land -1<z<0)$$

01.14.27.0619.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = \frac{\pi}{2}+2\cos^{-1}\left(\frac{1}{z}\right)\ /;\ (z\in\mathbb{R}\land 0<z<1)$$

01.14.27.0620.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = \frac{\pi z}{2\sqrt{z^2-1}}\sqrt{1-\frac{1}{z^2}}\left(\sqrt{\frac{1}{z^2}}\,z-\sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}}+\sqrt{\frac{i}{z}}\sqrt{-i z}-\sqrt{-\frac{i}{z}}\sqrt{i z}+\sqrt{1+\frac{1}{z}}\sqrt{\frac{z}{z+1}}-2\right)+\frac{2z}{\sqrt{z^2-1}}\sqrt{1-\frac{1}{z^2}}\cos^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{2z\sqrt{1-z^2}}{1-2z^2}\right)$

Involving $\tan^{-1}\left(\frac{2z\sqrt{1-z^2}}{1-2z^2}\right)$ and $\cos^{-1}(z)$

01.14.27.0621.01

$$\tan^{-1}\left(\frac{2z\sqrt{1-z^2}}{1-2z^2}\right) = \pi-2\cos^{-1}(z)\;/;\;\frac{\pi}{4}\leq|\arg(z)|<\frac{3\pi}{4}$$

01.14.27.0622.01

$$\tan^{-1}\left(\frac{2z\sqrt{1-z^2}}{1-2z^2}\right) = -2\cos^{-1}(z)-\frac{\pi}{2}\left(\frac{\sqrt{z^2-1}\,z}{\sqrt{z^4-z^2}}+\sqrt{\frac{1}{z}}\sqrt{\frac{1}{\sqrt{2}\,z-1}}\sqrt{\sqrt{2}\,z-1}\sqrt{z}-\sqrt{-\frac{1}{z}}\sqrt{-z}\sqrt{-\sqrt{2}\,z-1}\sqrt{-\frac{1}{\sqrt{2}\,z+1}}+\frac{\sqrt{z^2}}{z}-2\right)$$

Involving $\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right)$ and $\cos^{-1}(z)$

01.14.27.0623.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = -\frac{\pi}{2}+2\cos^{-1}(z)\;/;\;-\frac{\pi}{2}\leq\arg(z)<0\bigvee 0<\arg(z)<\frac{\pi}{2}\bigvee(z\in\mathbb{R}\land 0<z<1)$$

01.14.27.0624.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = -\frac{3\pi}{2}+2\cos^{-1}(z)\;/;\;\frac{\pi}{2}\leq\arg(z)<0\bigvee -\pi<\arg(z)<-\frac{\pi}{2}\bigvee(z\in\mathbb{R}\land -1<z<0)$$

01.14.27.0625.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = \frac{\pi}{2} + 2\cos^{-1}(z) \text{ /; } (z \in \mathbb{R} \land z > 1)$$

01.14.27.0626.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = -\frac{5\pi}{2} + 2\cos^{-1}(z) \text{ /; } (z \in \mathbb{R} \land z < -1)$$

01.14.27.0627.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = \frac{\pi}{2}\left(-\sqrt{\frac{1}{1-z}}\sqrt{1-z} + \sqrt{\frac{1}{z+1}}\sqrt{z+1} - \sqrt{-iz}\sqrt{\frac{i}{z}} + \sqrt{-\frac{i}{z}}\sqrt{iz} + \frac{\sqrt{z^2}}{z} - 2\right) + 2\cos^{-1}(z)$$

Involving $\cot^{-1}$

Involving $\tan^{-1}(z)$

Involving $\tan^{-1}(z)$ and $\cot^{-1}(z)$

01.14.27.0628.01

$$\tan^{-1}(z) = \frac{\pi}{2} - \cot^{-1}(z) \text{ /; } \operatorname{Re}(z) > 0 \lor (iz \in \mathbb{R} \land iz < -1) \lor (iz \in \mathbb{R} \land 0 < iz < 1)$$

01.14.27.0629.01

$$\tan^{-1}(z) = -\cot^{-1}(z) - \frac{\pi}{2} \text{ /; } \operatorname{Re}(z) < 0 \lor (iz \in \mathbb{R} \land iz > 1) \lor (iz \in \mathbb{R} \land -1 < iz < 0)$$

01.14.27.0630.01

$$\tan^{-1}(z) = \frac{\pi\sqrt{z^2}}{2z} - \cot^{-1}(z) \text{ /; } iz \notin (-1, 1)$$

01.14.27.0020.01

$$\tan^{-1}(z) = \frac{\pi}{2}\operatorname{sgn}(\operatorname{Re}(z)) - \cot^{-1}(z) \text{ /; } \operatorname{Re}(z) \neq 0$$

01.14.27.0021.02

$$\tan^{-1}(z) = \frac{\pi}{2}\sqrt{\frac{1}{z^2}}\, z\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1} - \cot^{-1}(z)$$

Involving $\tan^{-1}(z)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0019.01

$$\tan^{-1}(z) = \cot^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{z}\right)$

Involving $\tan^{-1}\left(\frac{1}{z}\right)$ and $\cot^{-1}(z)$

01.14.27.0631.01

$$\tan^{-1}\left(\frac{1}{z}\right) = \cot^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cot^{-1}\left(\sqrt{z}\right)$

01.14.27.0632.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - \cot^{-1}\left(\sqrt{z}\right) /; z \notin (-1, 0)$$

01.14.27.0633.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\frac{\pi}{2} - \cot^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0634.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} \sqrt{\frac{z+1}{z}} \sqrt{\frac{z}{z+1}} - \cot^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cot^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0635.01

$$\tan^{-1}\left(\sqrt{z}\right) = \cot^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cot^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0636.01

$$\tan^{-1}\left(\sqrt{z}\right) = \cot^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.0637.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0638.01

$$\tan^{-1}\left(\sqrt{z}\right) = \sqrt{z} \sqrt{\frac{1}{z}} \cot^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cot^{-1}\left(1/\sqrt{\frac{1}{z}}\right)$

01.14.27.0639.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} - \cot^{-1}\left(1/\sqrt{\frac{1}{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.0640.01

$$\tan^{-1}(\sqrt{z}) = -\frac{\pi}{2} + \cot^{-1}\left(1/\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0641.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} + \cot^{-1}\left(1/\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0642.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2}\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - \sqrt{z}\sqrt{\frac{1}{z}}\cot^{-1}\left(1/\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cot^{-1}(\sqrt{z})$

01.14.27.0643.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \cot^{-1}(\sqrt{z})$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cot^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0644.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - \cot^{-1}\left(\frac{1}{\sqrt{z}}\right) /; z \notin (-1, 0)$$

01.14.27.0645.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{\pi}{2} - \cot^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0646.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - \cot^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cot^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0647.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - \cot^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.0648.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{\pi}{2} + \cot^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0649.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} + \cot^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0650.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - \sqrt{z}\sqrt{\frac{1}{z}}\cot^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cot^{-1}\left(1\Big/\sqrt{\frac{1}{z}}\right)$

01.14.27.0651.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \cot^{-1}\left(1\Big/\sqrt{\frac{1}{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.0652.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\cot^{-1}\left(1\Big/\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0653.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \sqrt{z}\sqrt{\frac{1}{z}}\cot^{-1}\left(1\Big/\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z^2}\right)$

Involving $\tan^{-1}\left(\sqrt{z^2}\right)$ and $\cot^{-1}(z)$

01.14.27.0654.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = \frac{\pi}{2} - \cot^{-1}(z) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0655.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = \cot^{-1}(z) + \frac{\pi}{2} \;/;\; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.0656.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = \cot^{-1}(z) - \frac{\pi}{2} \;/;\; (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0657.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = -\cot^{-1}(z) - \frac{\pi}{2} \;/;\; (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0658.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = \frac{\pi}{2} \sqrt{\frac{z-i}{z+i}} \sqrt{\frac{z+i}{z-i}} - \frac{\sqrt{z^2}}{z} \cot^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{z^2}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0659.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = \cot^{-1}\left(\frac{1}{z}\right) \;/;\; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0660.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = -\cot^{-1}\left(\frac{1}{z}\right) \;/;\; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0661.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = \frac{\sqrt{z^2}}{z} \cot^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(a\,(b\,z^c)^m\right)$

Involving $\tan^{-1}(a\,(b\,z^c)^m)$ and $\cot^{-1}\left(\frac{1}{a}\,b^{-m}\,z^{-m\,c}\right)$

01.14.27.0662.01

$$\tan^{-1}(a\,(b\,z^c)^m) = \frac{(b\,z^c)^m}{b^m\,z^{m\,c}} \cot^{-1}\left(\frac{1}{a}\,b^{-m}\,z^{-m\,c}\right) \;/;\; 2\,m \in \mathbb{Z}$$

Involving $\tan^{-1}\left(\frac{1-z}{1+z}\right)$

Involving $\tan^{-1}\left(\frac{1-z}{1+z}\right)$ and $\cot^{-1}(z)$

01.14.16.0004.02

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = \cot^{-1}(z) - \frac{\pi}{4} \;/;\; |z| > 1 \bigvee -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.0663.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = \cot^{-1}(z) + \frac{3\pi}{4} /; |z| < 1 \bigwedge \left(\frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.0664.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = \frac{\pi}{4}\left(-\left(\sqrt{\frac{1}{z^2}}\, z - 1\right)\left(\frac{z^2-1}{z}\sqrt{\frac{z^2}{(z^2-1)^2}} + 1\right) - 2\sqrt{\frac{z-i}{z}}\sqrt{\frac{z}{z-i}} + 1\right) + \cot^{-1}(z) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1-z}{1+z}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0665.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = \frac{\pi}{4} - \cot^{-1}\left(\frac{1}{z}\right) /; |z| < 1 \bigvee -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0666.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = -\cot^{-1}\left(\frac{1}{z}\right) - \frac{3\pi}{4} /; |z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.0667.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = -\frac{\pi}{4}\left(-\left(\frac{\sqrt{z^2}}{z} - 1\right)\left(\frac{1-z^2}{z}\sqrt{\frac{z^2}{(z^2-1)^2}} + 1\right) - 2\sqrt{1-iz}\sqrt{\frac{1}{1-iz}} + 1\right) - \cot^{-1}\left(\frac{1}{z}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{z-1}{z+1}\right)$

Involving $\tan^{-1}\left(\frac{z-1}{z+1}\right)$ and $\cot^{-1}(z)$

01.14.27.0668.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -\cot^{-1}(z) + \frac{\pi}{4} /; |z| > 1 \bigvee -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.0669.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -\cot^{-1}(z) - \frac{3\pi}{4} /; |z| < 1 \bigwedge \left(\frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.0670.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -\frac{\pi}{4}\left(-\left(\sqrt{\frac{1}{z^2}}\, z - 1\right)\left(\frac{z^2-1}{z}\sqrt{\frac{z^2}{(z^2-1)^2}} + 1\right) - 2\sqrt{\frac{z-i}{z}}\sqrt{\frac{z}{z-i}} + 1\right) - \cot^{-1}(z) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{z-1}{z+1}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0671.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -\frac{\pi}{4} + \cot^{-1}\left(\frac{1}{z}\right) /; |z| < 1 \bigvee -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0672.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = \cot^{-1}\left(\frac{1}{z}\right) + \frac{3\pi}{4} /; |z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.0673.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = \frac{\pi}{4}\left(-\left(\frac{\sqrt{z^2}}{z}-1\right)\left(\frac{1-z^2}{z}\sqrt{\frac{z^2}{\left(z^2-1\right)^2}}+1\right)-2\sqrt{1-i\,z}\sqrt{\frac{1}{1-i\,z}}+1\right)+\cot^{-1}\left(\frac{1}{z}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1+z}{1-z}\right)$

Involving $\tan^{-1}\left(\frac{1+z}{1-z}\right)$ and $\cot^{-1}(z)$

01.14.27.0674.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = \frac{3\pi}{4}-\cot^{-1}(z) /; |z| < 1 \bigwedge -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.0675.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = -\cot^{-1}(z)-\frac{\pi}{4} /; |z| > 1 \vee \operatorname{Re}(z) < 0$$

01.14.27.0676.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = \frac{\pi}{4}\left(\left(\sqrt{\frac{1}{z^2}}\,z+1\right)\left(1-\frac{z^2-1}{z}\sqrt{\frac{z^2}{\left(z^2-1\right)^2}}\right)-2\sqrt{\frac{z+i}{z}}\sqrt{\frac{z}{z+i}}+1\right)-\cot^{-1}(z) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1+z}{1-z}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0677.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = \cot^{-1}\left(\frac{1}{z}\right)+\frac{\pi}{4} /; |z| < 1 \bigvee \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}\right)$$

01.14.27.0678.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = \cot^{-1}\left(\frac{1}{z}\right)-\frac{3\pi}{4} /; |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0679.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = \cot^{-1}\left(\frac{1}{z}\right)-\frac{\pi}{4}\left(\left(\frac{\sqrt{z^2}}{z}+1\right)\left(1-\frac{1-z^2}{z}\sqrt{\frac{z^2}{\left(z^2-1\right)^2}}\right)-2\sqrt{i\,z+1}\sqrt{\frac{1}{i\,z+1}}+1\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{z+1}{z-1}\right)$

Involving $\tan^{-1}\left(\frac{z+1}{z-1}\right)$ and $\cot^{-1}(z)$

01.14.27.0680.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = \cot^{-1}(z)+\frac{\pi}{4} /; |z| > 1 \bigvee \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.0681.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = \cot^{-1}(z)-\frac{3\pi}{4} /; |z| < 1 \bigwedge -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.0682.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = -\frac{\pi}{4}\left(\left(\sqrt{\frac{1}{z^2}}\, z+1\right)\left(\frac{1-z^2}{z}\sqrt{\frac{z^2}{\left(1-z^2\right)^2}}+1\right)-2\sqrt{\frac{z+i}{z}}\,\sqrt{\frac{z}{z+i}}+1\right)+\cot^{-1}(z) \;/;\; |z|\neq 1$$

Involving $\tan^{-1}\left(\frac{z+1}{z-1}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0683.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = -\frac{\pi}{4}-\cot^{-1}\left(\frac{1}{z}\right) \;/;\; |z|<1 \bigvee \frac{\pi}{2}<\arg(z)\leq\pi \bigvee -\pi<\arg(z)\leq-\frac{\pi}{2}$$

01.14.27.0684.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = -\cot^{-1}\left(\frac{1}{z}\right)+\frac{3\pi}{4} \;/;\; |z|>1 \bigwedge -\frac{\pi}{2}<\arg(z)\leq\frac{\pi}{2}$$

01.14.27.0685.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = \frac{\pi}{4}\left(\left(\frac{\sqrt{z^2}}{z}+1\right)\left(-\frac{1-z^2}{z}\sqrt{\frac{z^2}{\left(z^2-1\right)^2}}+1\right)-2\sqrt{1+i\,z}\,\sqrt{\frac{1}{1+i\,z}}+1\right)-\cot^{-1}\left(\frac{1}{z}\right) \;/;\; |z|\neq 1$$

Involving $\tan^{-1}\left(\frac{2z}{1-z^2}\right)$

Involving $\tan^{-1}\left(\frac{2z}{1-z^2}\right)$ and $\cot^{-1}(z)$

01.14.27.0686.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = \pi-2\cot^{-1}(z) \;/;\; |z|<1 \bigwedge -\frac{\pi}{2}\leq\arg(z)<\frac{\pi}{2}$$

01.14.27.0687.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = -2\cot^{-1}(z)-\pi \;/;\; |z|<1 \bigwedge \left(\frac{\pi}{2}\leq\arg(z)\leq\pi \bigvee -\pi<\arg(z)<-\frac{\pi}{2}\right)$$

01.14.27.0688.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = z\,\pi\sqrt{\frac{1}{z^2}}-2\cot^{-1}(z) \;/;\; |z|<1$$

01.14.16.0006.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = -2\cot^{-1}(z) \;/;\; |z|>1$$

01.14.27.0689.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = \left(1+\frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\right)z\sqrt{z^{-2}}\,\frac{\pi}{2}-2\cot^{-1}(z) \;/;\; |z|\neq 1$$

Involving $\tan^{-1}\left(\frac{2z}{1-z^2}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0690.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = 2\cot^{-1}\left(\frac{1}{z}\right) /; |z| < 1$$

01.14.27.0691.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = 2\cot^{-1}\left(\frac{1}{z}\right) - \pi /; |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0692.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = 2\cot^{-1}\left(\frac{1}{z}\right) + \pi /; |z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}\right)$$

01.14.27.0693.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = 2\cot^{-1}\left(\frac{1}{z}\right) - \frac{\sqrt{z^2}\,\pi}{z} /; |z| > 1$$

01.14.27.0694.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = \left(\frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2} - 1\right)\frac{\pi\sqrt{z^2}}{2z} + 2\cot^{-1}\left(\frac{1}{z}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2z}{z^2-1}\right)$

Involving $\tan^{-1}\left(\frac{2z}{z^2-1}\right)$ and $\cot^{-1}(z)$

01.14.27.0695.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -\pi + 2\cot^{-1}(z) /; |z| < 1 \bigwedge -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.0696.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = 2\cot^{-1}(z) + \pi /; |z| < 1 \bigwedge \left(\frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.0697.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -z\,\pi\sqrt{\frac{1}{z^2}} + 2\cot^{-1}(z) /; |z| < 1$$

01.14.27.0698.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = 2\cot^{-1}(z) /; |z| > 1$$

01.14.27.0699.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -\left(1 + \frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\right) z\sqrt{z^{-2}}\,\frac{\pi}{2} + 2\cot^{-1}(z) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2z}{z^2-1}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0700.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -2\cot^{-1}\left(\frac{1}{z}\right) /; |z| < 1$$

01.14.27.0701.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -2\cot^{-1}\left(\frac{1}{z}\right) + \pi /; |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0702.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -2\cot^{-1}\left(\frac{1}{z}\right) - \pi /; |z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}\right)$$

01.14.27.0703.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -2\cot^{-1}\left(\frac{1}{z}\right) + \frac{\sqrt{z^2}\,\pi}{z} /; |z| > 1$$

01.14.27.0704.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -\left(\frac{1-z}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2} - 1\right)\frac{\pi\sqrt{z^2}}{2z} - 2\cot^{-1}\left(\frac{1}{z}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1-z^2}{2z}\right)$

Involving $\tan^{-1}\left(\frac{1-z^2}{2z}\right)$ and $\cot^{-1}(z)$

01.14.27.0705.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = 2\cot^{-1}(z) - \frac{\pi}{2} /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0706.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = 2\cot^{-1}(z) + \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0022.02

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = 2\cot^{-1}(z) - \frac{\pi z}{2}\sqrt{z^{-2}}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}$$

Involving $\tan^{-1}\left(\frac{1-z^2}{2z}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0707.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = \frac{\pi}{2} - 2\cot^{-1}\left(\frac{1}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0708.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = -2\cot^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0709.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = z\sqrt{z^{-2}}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\,\frac{\pi}{2} - 2\cot^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z^2-1}{2z}\right)$

Involving $\tan^{-1}\left(\frac{z^2-1}{2z}\right)$ and $\cot^{-1}(z)$

01.14.27.0710.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = -2\cot^{-1}(z) + \frac{\pi}{2} \;/;\; \mathrm{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0711.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = -2\cot^{-1}(z) - \frac{\pi}{2} \;/;\; \mathrm{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0712.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = -2\cot^{-1}(z) + \frac{\pi z}{2}\sqrt{z^{-2}}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}$$

Involving $\tan^{-1}\left(\frac{z^2-1}{2z}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0713.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = -\frac{\pi}{2} + 2\cot^{-1}\left(\frac{1}{z}\right) \;/;\; \mathrm{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0714.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = 2\cot^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; \mathrm{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0715.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = -z\sqrt{z^{-2}}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\,\frac{\pi}{2} + 2\cot^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right)$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right)$ and $\cot^{-1}\left(\sqrt{z}\right)$

01.14.27.0716.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) = \pi - 2\cot^{-1}\left(\sqrt{z}\right) \;/;\; |z| < 1 \land |\arg(z)| < \pi$$

01.14.27.0717.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == -2\cot^{-1}\left(\sqrt{z}\right) - \pi \,/;\, (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0718.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == \sqrt{\frac{z+1}{z}}\,\sqrt{\frac{z}{z+1}}\,\pi - 2\cot^{-1}\left(\sqrt{z}\right) \,/;\, |z| < 1$$

01.14.27.0719.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == -2\cot^{-1}\left(\sqrt{z}\right) \,/;\, |z| > 1$$

01.14.27.0720.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == \frac{1}{2}\left(\frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2} + 2\sqrt{\frac{z}{z+1}}\,\sqrt{\frac{z+1}{z}} - 1\right)\pi - 2\cot^{-1}\left(\sqrt{z}\right) \,/;\, |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right)$ and $\cot^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0721.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == 2\cot^{-1}\left(\frac{1}{\sqrt{z}}\right) \,/;\, |z| < 1$$

01.14.27.0722.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == 2\cot^{-1}\left(\frac{1}{\sqrt{z}}\right) - \pi \,/;\, |z| > 1$$

01.14.27.0723.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == 2\cot^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2}\left(-\frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2} + 1\right) \,/;\, |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right)$ and $\cot^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0724.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == 2\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) \,/;\, |z| < 1 \bigwedge z \notin (-1, 0)$$

01.14.27.0725.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == -2\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) \,/;\, (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0726.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) == 2\sqrt{z}\,\sqrt{\frac{1}{z}}\,\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) \,/;\, |z| < 1$$

01.14.27.0727.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) = 2\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) - \pi \;/;\; |z| > 1 \bigwedge z \notin (-\infty, -1)$$

01.14.27.0728.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) = -2\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) - \pi \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0729.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) = 2\sqrt{z}\sqrt{\frac{1}{z}}\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) - \pi \;/;\; |z| > 1$$

01.14.27.0730.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{1-z}\right) = 2\sqrt{z}\sqrt{\frac{1}{z}}\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2}\left(-\frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2} + 1\right) /;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right)$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right)$ and $\cot^{-1}\left(\sqrt{z}\right)$

01.14.27.0731.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = -\pi + 2\cot^{-1}\left(\sqrt{z}\right) /;\; |z| < 1 \bigwedge |\arg(z)| < \pi$$

01.14.27.0732.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = 2\cot^{-1}\left(\sqrt{z}\right) + \pi \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0733.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = -\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\,\pi + 2\cot^{-1}\left(\sqrt{z}\right) /;\; |z| < 1$$

01.14.27.0734.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = 2\cot^{-1}\left(\sqrt{z}\right) /;\; |z| > 1$$

01.14.27.0735.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) = -\frac{1}{2}\left(\frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2} + 2\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 1\right)\pi + 2\cot^{-1}\left(\sqrt{z}\right) /;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right)$ and $\cot^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0736.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == -2\cot^{-1}\left(\frac{1}{\sqrt{z}}\right) /; |z| < 1$$

01.14.27.0737.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == -2\cot^{-1}\left(\frac{1}{\sqrt{z}}\right) + \pi /; |z| > 1$$

01.14.27.0738.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == -2\cot^{-1}\left(\frac{1}{\sqrt{z}}\right) + \frac{\pi}{2}\left(-\frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2} + 1\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right)$ and $\cot^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0739.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == -2\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |z| < 1 \bigwedge z \notin (-1, 0)$$

01.14.27.0740.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == 2\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \wedge -1 < z < 0)$$

01.14.27.0741.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == -2\sqrt{z}\sqrt{\frac{1}{z}}\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |z| < 1$$

01.14.27.0742.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == -2\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) + \pi /; |z| > 1 \bigwedge z \notin (-\infty, -1)$$

01.14.27.0743.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == 2\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) + \pi /; (z \in \mathbb{R} \wedge z < -1)$$

01.14.27.0744.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == -2\sqrt{z}\sqrt{\frac{1}{z}}\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) + \pi /; |z| > 1$$

01.14.27.0745.01

$$\tan^{-1}\left(\frac{2\sqrt{z}}{z-1}\right) == -2\sqrt{z}\sqrt{\frac{1}{z}}\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2}\left(-\frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2} + 1\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right)$ and $\cot^{-1}\left(\sqrt{z}\right)$

01.14.27.0746.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) = 2\cot^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} \;/;\; z \notin (-1, 0)$$

01.14.27.0747.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) = 2\cot^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0748.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) = 2\cot^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2}\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right)$ and $\cot^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0749.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) = \frac{\pi}{2} - 2\cot^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\; z \notin (-1, 0)$$

01.14.27.0750.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) = -\frac{\pi}{2} - 2\cot^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0751.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) = \frac{\pi}{2}\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 2\cot^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right)$ and $\cot^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0752.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) = \frac{\pi}{2} - 2\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\; |\arg(z)| < \pi$$

01.14.27.0753.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) = -\frac{\pi}{2} + 2\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0754.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) = \frac{\pi}{2} + 2\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0755.01

$$\tan^{-1}\left(\frac{1-z}{2\sqrt{z}}\right) = \frac{1}{2}\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}\,\pi - 2\sqrt{z}\sqrt{\frac{1}{z}}\cot^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right)$ and $\cot^{-1}\left(\sqrt{z}\right)$

01.14.27.0756.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -2\cot^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2} \;/;\; z \notin (-1, 0)$$

01.14.27.0757.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -2\cot^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0758.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -2\cot^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2}\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right)$ and $\cot^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0759.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -\frac{\pi}{2} + 2\cot^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\; z \notin (-1, 0)$$

01.14.27.0760.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = \frac{\pi}{2} + 2\cot^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0761.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -\frac{\pi}{2}\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} + 2\cot^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right)$ and $\cot^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0762.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -\frac{\pi}{2} + 2\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\; |\arg(z)| < \pi$$

01.14.27.0763.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = \frac{\pi}{2} - 2\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0764.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -\frac{\pi}{2} - 2\cot^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0765.01

$$\tan^{-1}\left(\frac{z-1}{2\sqrt{z}}\right) = -\frac{1}{2}\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}\,\pi + 2\sqrt{z}\sqrt{\frac{1}{z}}\cot^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}+c\,z\right)$

Involving $\tan^{-1}\left(\sqrt{1+z^2}+z\right)$ and $\cot^{-1}(z)$

01.14.27.0766.01

$$\tan^{-1}\left(z+\sqrt{z^2+1}\right) = \frac{\pi}{2} - \frac{1}{2}\cot^{-1}(z) \;/;\; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0767.01

$$\tan^{-1}\left(z+\sqrt{z^2+1}\right) = -\frac{1}{2}\cot^{-1}(z) \;/;\; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0768.01

$$\tan^{-1}\left(z+\sqrt{z^2+1}\right) = \left(1 + z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right)\frac{\pi}{4} - \frac{1}{2}\cot^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}+z\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0769.01

$$\tan^{-1}\left(\sqrt{1+z^2}+z\right) = \frac{1}{2}\cot^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{4}$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}-z\right)$ and $\cot^{-1}(z)$

01.14.27.0770.01

$$\tan^{-1}\left(\sqrt{z^2+1}-z\right) = \frac{1}{2}\cot^{-1}(z) \;/;\; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0771.01

$$\tan^{-1}\left(\sqrt{z^2+1}-z\right) = \frac{1}{2}\cot^{-1}(z) + \frac{\pi}{2} \;/;\; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0772.01

$$\tan^{-1}\left(\sqrt{1+z^2}-z\right) = \left(1 - z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right)\frac{\pi}{4} + \frac{1}{2}\cot^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}-z\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0773.01

$$\tan^{-1}\left(\sqrt{1+z^2}-z\right) = \frac{\pi}{4} - \frac{1}{2}\cot^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}+c\,z}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}+z}\right)$ and $\cot^{-1}(z)$

01.14.27.0774.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right) = \frac{1}{2}\cot^{-1}(z) \;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0775.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right) = \frac{1}{2}\cot^{-1}(z) + \frac{\pi}{2} \;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0776.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right) = \left(1 - z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right)\frac{\pi}{4} + \frac{1}{2}\cot^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}+z}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0777.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right) = \frac{\pi}{4} - \frac{1}{2}\cot^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}-z}\right)$ and $\cot^{-1}(z)$

01.14.27.0778.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2+1}-z}\right) = \frac{\pi}{2} - \frac{1}{2}\cot^{-1}(z) \;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0779.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2+1}-z}\right) = -\frac{1}{2}\cot^{-1}(z) \;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0780.01

$$\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}-z}\right) = \left(1+z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right)\frac{\pi}{4} - \frac{1}{2}\cot^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}-z}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0781.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2+1}-z}\right) = \frac{1}{2}\cot^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{4}$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}+a}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right)$ and $\cot^{-1}(z)$

01.14.27.0782.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right) = \frac{\pi}{4} + \frac{1}{2}\cot^{-1}(z) \;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0783.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right) = \frac{1}{2}\cot^{-1}(z) - \frac{\pi}{4} \;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0784.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right) = \frac{\pi\,z}{4}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2}} + \frac{1}{2}\cot^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0785.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) = \frac{\pi}{2} - \frac{1}{2}\cot^{-1}\left(\frac{1}{z}\right) \;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0786.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) = -\frac{1}{2}\cot^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0787.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) = z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\frac{\pi}{2} - \frac{1}{2}\cot^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right)$ and $\cot^{-1}(z)$

01.14.27.0788.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right) = \frac{\pi}{4} - \frac{1}{2}\cot^{-1}(z) \;/;\; \mathrm{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0789.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right) = -\frac{1}{2}\cot^{-1}(z) - \frac{\pi}{4} \;/;\; \mathrm{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0790.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right) = \frac{\pi z}{4}\sqrt{\frac{1}{z^2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}} - \frac{1}{2}\cot^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0791.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}-1}{z}\right) = \frac{1}{2}\cot^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+a}\right)$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right)$ and $\cot^{-1}(z)$

01.14.27.0792.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}+1}\right) = \frac{\pi}{4} - \frac{1}{2}\cot^{-1}(z) \;/;\; \mathrm{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0793.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}+1}\right) = -\frac{1}{2}\cot^{-1}(z) - \frac{\pi}{4} \;/;\; \mathrm{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0794.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right) = \frac{\pi z}{4}\sqrt{\frac{1}{z^2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}} - \frac{1}{2}\cot^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0795.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right) = \frac{1}{2}\cot^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right)$ and $\cot^{-1}(z)$

01.14.27.0796.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = \frac{\pi}{4} + \frac{1}{2}\cot^{-1}(z) \;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0797.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = \frac{1}{2}\cot^{-1}(z) - \frac{\pi}{4} \;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0798.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right) = \frac{\pi z}{4}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2}} + \frac{1}{2}\cot^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right)$ and $\cot^{-1}\left(\frac{1}{z}\right)$

01.14.27.0799.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = \frac{\pi}{2} - \frac{1}{2}\cot^{-1}\left(\frac{1}{z}\right) \;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.0800.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = -\frac{1}{2}\cot^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0801.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right) = z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\frac{\pi}{2} - \frac{1}{2}\cot^{-1}\left(\frac{1}{z}\right)$$

Involving $\csc^{-1}$

Involving $\tan^{-1}(z)$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\frac{1+z^2}{2z}\right)$

01.14.27.0802.01

$$\tan^{-1}(z) = \frac{1}{2}\csc^{-1}\left(\frac{z^2+1}{2z}\right) /; |z| < 1$$

01.14.27.0803.01

$$\tan^{-1}(z) = \frac{\pi}{2} - \frac{1}{2}\csc^{-1}\left(\frac{z^2+1}{2z}\right) /; |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0804.01

$$\tan^{-1}(z) = -\frac{1}{2}\csc^{-1}\left(\frac{z^2+1}{2z}\right) - \frac{\pi}{2} /; |z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}\right)$$

01.14.27.0805.01

$$\tan^{-1}(z) = \frac{\pi\sqrt{z^2}}{2z} - \frac{1}{2}\csc^{-1}\left(\frac{z^2+1}{2z}\right) /; |z| > 1$$

01.14.27.0806.01

$$\tan^{-1}(z) = \frac{\pi\sqrt{z^2}}{4z}\left(1 - \frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\right) + \frac{(1-z)}{2(1+z)}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\csc^{-1}\left(\frac{z^2+1}{2z}\right) /; |z| \neq 1$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\frac{1+z^2}{1-z^2}\right)$

01.14.27.0807.01

$$\tan^{-1}(z) = -\frac{1}{2}\csc^{-1}\left(\frac{1+z^2}{1-z^2}\right) + \frac{\pi}{4} /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0808.01

$$\tan^{-1}(z) = \frac{1}{2}\csc^{-1}\left(\frac{1+z^2}{1-z^2}\right) - \frac{\pi}{4} /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0809.01

$$\tan^{-1}(z) = \frac{3\pi}{4} + \frac{1}{2}\csc^{-1}\left(\frac{1+z^2}{1-z^2}\right) /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.0810.01

$$\tan^{-1}(z) = -\frac{3\pi}{4} - \frac{1}{2}\csc^{-1}\left(\frac{1+z^2}{1-z^2}\right) /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.0811.01

$$\tan^{-1}(z) = \frac{\pi}{4}\left(\sqrt{\frac{1}{1-iz}}\sqrt{1-iz} - \sqrt{iz+1}\sqrt{\frac{1}{iz+1}} + \frac{\sqrt{z^2}}{z}\right) - \frac{\sqrt{z^2}\sqrt{z^2+1}}{2z}\sqrt{\frac{1}{z^2+1}}\csc^{-1}\left(\frac{1+z^2}{1-z^2}\right)$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\frac{z^2+1}{z^2-1}\right)$

01.14.27.0812.01

$$\tan^{-1}(z) = \frac{1}{2}\csc^{-1}\left(\frac{z^2+1}{z^2-1}\right) + \frac{\pi}{4} /; \operatorname{Re}(z) > 0 \lor (iz \in \mathbb{R} \land -1 < iz < 0)$$

01.14.27.0813.01

$$\tan^{-1}(z) = -\frac{1}{2}\csc^{-1}\left(\frac{z^2+1}{z^2-1}\right) - \frac{\pi}{4} /; \operatorname{Re}(z) < 0 \lor (iz \in \mathbb{R} \land 0 < iz < 1)$$

01.14.27.0814.01

$$\tan^{-1}(z) = \frac{3\pi}{4} - \frac{1}{2}\csc^{-1}\left(\frac{z^2+1}{z^2-1}\right) /; (iz \in \mathbb{R} \land iz < -1)$$

01.14.27.0815.01

$$\tan^{-1}(z) = -\frac{3\pi}{4} + \frac{1}{2}\csc^{-1}\left(\frac{z^2+1}{z^2-1}\right) /; (iz \in \mathbb{R} \land iz > 1)$$

01.14.27.0816.01

$$\tan^{-1}(z) = \frac{\pi}{4}\left(\sqrt{\frac{1}{1-iz}}\sqrt{1-iz} - \sqrt{iz+1}\sqrt{\frac{1}{iz+1}} + \frac{\sqrt{z^2}}{z}\right) + \frac{\sqrt{z^2}\sqrt{z^2+1}}{2z}\sqrt{\frac{1}{z^2+1}}\csc^{-1}\left(\frac{z^2+1}{z^2-1}\right)$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\sqrt{z^2+1}\right)$

01.14.27.0817.01

$$\tan^{-1}(z) = \frac{\pi}{2} - \csc^{-1}\left(\sqrt{z^2+1}\right) /; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0818.01

$$\tan^{-1}(z) = \csc^{-1}\left(\sqrt{z^2+1}\right) - \frac{\pi}{2} /; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0023.01

$$\tan^{-1}(z) = \frac{\sqrt{z^2}}{z}\left(\frac{\pi}{2} - \csc^{-1}\left(\sqrt{z^2+1}\right)\right)$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right)$

01.14.27.0819.01

$$\tan^{-1}(z) = \csc^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right) /; \operatorname{Re}(z) \neq 0 \lor (iz \in \mathbb{R} \land -1 < iz < 1)$$

01.14.27.0820.01

$$\tan^{-1}(z) = \pi - \csc^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right) /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.0821.01

$$\tan^{-1}(z) = -\pi - \csc^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right) /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.0822.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i z}\sqrt{\frac{1}{1-i z}} - \sqrt{i z+1}\sqrt{\frac{1}{i z+1}}\right) + \sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\csc^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right)$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right)$

01.14.27.0823.01

$$\tan^{-1}(z) = \csc^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0824.01

$$\tan^{-1}(z) = -\csc^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right) /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0825.01

$$\tan^{-1}(z) = \pi - \csc^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right) /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.0826.01

$$\tan^{-1}(z) = -\pi + \csc^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right) /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.0827.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i z}\sqrt{\frac{1}{1-i z}} - \sqrt{i z+1}\sqrt{\frac{1}{i z+1}}\right) + \frac{z^2+1}{z}\sqrt{\frac{1}{z^2+1}}\sqrt{\frac{z^2}{z^2+1}}\csc^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right)$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{-z^2}}\right)$

01.14.27.0828.01

$$\tan^{-1}(z) = \csc^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{-z^2}}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0829.01

$$\tan^{-1}(z) = -\csc^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{-z^2}}\right) /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0830.01

$$\tan^{-1}(z) = \pi - \csc^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{-z^2}}\right) /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.0831.01

$$\tan^{-1}(z) = -\pi + \csc^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{-z^2}}\right) /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.0832.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i z}\sqrt{\frac{1}{1-i z}} - \sqrt{i z+1}\sqrt{\frac{1}{i z+1}}\right) + z\sqrt{\frac{1}{z^2}}\csc^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{-z^2}}\right)$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right)$

01.14.27.0833.01

$$\tan^{-1}(z) = \csc^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.0834.01

$$\tan^{-1}(z) = -\csc^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right) /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.0835.01

$$\tan^{-1}(z) = \pi - \csc^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right) /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.0836.01

$$\tan^{-1}(z) = -\pi + \csc^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right) /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.0837.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i z}\sqrt{\frac{1}{1-i z}} - \sqrt{i z+1}\sqrt{\frac{1}{i z+1}}\right) + \frac{\sqrt{z}\sqrt{-z^2-1}}{\sqrt{-z}}\sqrt{\frac{1}{z^2+1}}\csc^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right)$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\sqrt{2}\,(1+z^2)^{1/4}\Big/\sqrt{\sqrt{1+z^2}+1}\right)$

01.14.27.0838.01

$$\tan^{-1}(z) = \pi - 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}+1}}\right) /; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0839.01

$$\tan^{-1}(z) = 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}+1}}\right) - \pi /; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0840.01

$$\tan^{-1}(z) = \frac{\sqrt{z^2}}{z}\left(\pi - 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}+1}}\right)\right)$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\sqrt{2}\,(1+z^2)^{1/4}\Big/\sqrt{\sqrt{1+z^2}-1}\right)$

01.14.27.0841.01

$$\tan^{-1}(z) = 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}-1}}\right) /; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0842.01

$$\tan^{-1}(z) = -2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}-1}}\right) /; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0843.01

$$\tan^{-1}(z) = \frac{2\sqrt{z^2}}{z}\csc^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}-1}}\right)$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\sqrt{2\sqrt{1+z^2}\Big/\left(\sqrt{1+z^2}+1\right)}\right)$

01.14.27.0844.01

$$\tan^{-1}(z) = \pi - 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{\sqrt{z^2+1}+1}}\right) /; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.0845.01

$$\tan^{-1}(z) = 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{\sqrt{z^2+1}+1}}\right) - \pi /; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0846.01

$$\tan^{-1}(z) = \frac{\sqrt{z^2}}{z}\left(\pi - 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{\sqrt{z^2+1}+1}}\right)\right)$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\sqrt{2\sqrt{1+z^2}\Big/\left(\sqrt{1+z^2}-1\right)}\right)$

01.14.27.0847.01

$$\tan^{-1}(z) = 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{\sqrt{z^2+1}-1}}\right) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1) \lor (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0848.01

$$\tan^{-1}(z) = -2\csc^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{\sqrt{z^2+1}-1}}\right) /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0) \lor (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0849.01

$$\tan^{-1}(z) = \frac{2\sqrt{z}\sqrt{-z^2-1}}{\sqrt{-z}\sqrt{z^2+1}}\csc^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{\sqrt{z^2+1}-1}}\right)$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\sqrt{2}\left(1+z^2\right)^{1/4}\Big/\sqrt{\sqrt{1+z^2}+z}\right)$

01.14.27.0850.01

$$\tan^{-1}(z) = 2\csc^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{z^2+1}}{\sqrt{\sqrt{z^2+1}+z}}\right) - \frac{\pi}{2} \;/;\; i\,z \notin (-\infty, -1)$$

01.14.27.0851.01

$$\tan^{-1}(z) = \frac{3\pi}{2} - 2\csc^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{z^2+1}}{\sqrt{\sqrt{z^2+1}+z}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0852.01

$$\tan^{-1}(z) = 2\sqrt{i\,z+1}\,\sqrt{\frac{1}{i\,z+1}}\,\csc^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{z^2+1}}{\sqrt{\sqrt{z^2+1}+z}}\right) - \left(\sqrt{i\,z+1}\,\sqrt{\frac{1}{i\,z+1}} - \frac{1}{2}\right)\pi$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\sqrt{2}\,(1+z^2)^{1/4} \Big/ \sqrt{\sqrt{1+z^2}-z}\right)$

01.14.27.0853.01

$$\tan^{-1}(z) = -2\csc^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{z^2+1}}{\sqrt{\sqrt{z^2+1}-z}}\right) + \frac{\pi}{2} \;/;\; i\,z \notin (1, \infty)$$

01.14.27.0854.01

$$\tan^{-1}(z) = -\frac{3\pi}{2} + 2\csc^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{z^2+1}}{\sqrt{\sqrt{z^2+1}-z}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0855.01

$$\tan^{-1}(z) = \left(\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}} - \frac{1}{2}\right)\pi - 2\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}}\,\csc^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{z^2+1}}{\sqrt{\sqrt{z^2+1}-z}}\right)$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\sqrt{2\sqrt{1+z^2} \Big/ \left(\sqrt{1+z^2}+z\right)}\right)$

01.14.27.0856.01

$$\tan^{-1}(z) = 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{z+\sqrt{z^2+1}}}\right) - \frac{\pi}{2} \;/;\; i\,z \notin (-\infty, -1)$$

01.14.27.0857.01

$$\tan^{-1}(z) = \frac{3\pi}{2} - 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{z+\sqrt{z^2+1}}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.0858.01

$$\tan^{-1}(z) = \pi\left(\frac{1}{2} - \sqrt{i\,z+1}\,\sqrt{\frac{1}{i\,z+1}}\right) + 2\sqrt{\frac{1}{i\,z+1}}\,\sqrt{i\,z+1}\,\csc^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{z+\sqrt{z^2+1}}}\right)$$

Involving $\tan^{-1}(z)$ and $\csc^{-1}\left(\sqrt{2\sqrt{1+z^2}\Big/\left(\sqrt{1+z^2}-z\right)}\right)$

01.14.27.0859.01

$$\tan^{-1}(z) = \frac{\pi}{2} - 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{\sqrt{z^2+1}-z}}\right) \;/;\; i\,z \notin (1, \infty)$$

01.14.27.0860.01

$$\tan^{-1}(z) = 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{\sqrt{z^2+1}-z}}\right) - \frac{3\pi}{2} \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0861.01

$$\tan^{-1}(z) = \left(\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}} - \frac{1}{2}\right)\pi - 2\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}}\,\csc^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{\sqrt{z^2+1}-z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\csc^{-1}\left(\frac{1+z}{1-z}\right)$

01.14.27.0862.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\frac{1}{2}\csc^{-1}\left(\frac{1+z}{1-z}\right) + \frac{\pi}{4} \;/;\; z \notin (-\infty, -1)$$

01.14.27.0863.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{3\pi}{4} + \frac{1}{2}\csc^{-1}\left(\frac{1+z}{1-z}\right) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0864.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{1}{4}\pi\left(2-\sqrt{z+1}\sqrt{\frac{1}{z+1}}\right)-\frac{1}{2}\sqrt{\frac{1}{z+1}}\sqrt{z+1}\csc^{-1}\left(\frac{1+z}{1-z}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\csc^{-1}\left(\frac{z+1}{z-1}\right)$

01.14.27.0865.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{1}{2}\csc^{-1}\left(\frac{z+1}{z-1}\right)+\frac{\pi}{4} \;/;\; z \notin (-\infty, -1)$$

01.14.27.0866.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{3\pi}{4}-\frac{1}{2}\csc^{-1}\left(\frac{z+1}{z-1}\right) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0867.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{1}{4}\pi\left(2-\sqrt{z+1}\sqrt{\frac{1}{z+1}}\right)+\frac{1}{2}\sqrt{\frac{1}{z+1}}\sqrt{z+1}\csc^{-1}\left(\frac{z+1}{z-1}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\csc^{-1}\left(\frac{1+z}{2\sqrt{z}}\right)$

01.14.27.0868.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{1}{2}\csc^{-1}\left(\frac{1+z}{2\sqrt{z}}\right) \;/;\; |z| < 1$$

01.14.27.0869.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}-\frac{1}{2}\csc^{-1}\left(\frac{1+z}{2\sqrt{z}}\right) \;/;\; |z| > 1$$

01.14.27.0870.01

$$\tan^{-1}\left(\sqrt{z}\right) = \left(1-\frac{1-z}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\right)\frac{\pi}{4}+\frac{1-z}{2(z+1)}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\csc^{-1}\left(\frac{1+z}{2\sqrt{z}}\right) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\csc^{-1}\left(\sqrt{z+1}\right)$

01.14.27.0871.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}-\csc^{-1}\left(\sqrt{z+1}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\csc^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right)$

01.14.27.0872.01

$$\tan^{-1}\left(\sqrt{z}\right) = \csc^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) \;/;\; z \notin (-\infty, -1)$$

01.14.27.0873.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi - \csc^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0874.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}\left(1 - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right) + \sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\csc^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\csc^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right)$

01.14.27.0875.01

$$\tan^{-1}\left(\sqrt{z}\right) = \csc^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right) /; |\arg(z)| < \pi$$

01.14.27.0876.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\csc^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0877.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi - \csc^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0878.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}\left(1 - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right) + \sqrt{\frac{1}{z}}\,\sqrt{z}\,\csc^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\csc^{-1}\left(\sqrt{\frac{z+1}{z}}\right)$

01.14.27.0879.01

$$\tan^{-1}\left(\sqrt{z}\right) = \csc^{-1}\left(\sqrt{\frac{z+1}{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.0880.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\csc^{-1}\left(\sqrt{\frac{z+1}{z}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0881.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi - \csc^{-1}\left(\sqrt{\frac{z+1}{z}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0882.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}\left(1 - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right) + \frac{\sqrt{-z-1}\,\sqrt{z}}{\sqrt{-z}}\,\sqrt{\frac{1}{z+1}}\,\csc^{-1}\left(\sqrt{\frac{z+1}{z}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\csc^{-1}\left(\sqrt{2}\,(1+z)^{1/4}\Big/\sqrt{\sqrt{z+1}+1}\right)$

01.14.27.0883.01

$$\tan^{-1}(\sqrt{z}) = \pi - 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{z+1}+1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\csc^{-1}\left(\sqrt{2}\,(1+z)^{1/4}\Big/\sqrt{\sqrt{z+1}-1}\right)$

01.14.27.0884.01

$$\tan^{-1}(\sqrt{z}) = 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{z+1}-1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\csc^{-1}\left(\sqrt{2\sqrt{1+z}\Big/\left(\sqrt{1+z}+1\right)}\right)$

01.14.27.0885.01

$$\tan^{-1}(\sqrt{z}) = \pi - 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\csc^{-1}\left(\sqrt{2\sqrt{1+z}\Big/\left(\sqrt{1+z}-1\right)}\right)$

01.14.27.0886.01

$$\tan^{-1}(\sqrt{z}) = 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right) /;\ z \notin (-1, 0)$$

01.14.27.0887.01

$$\tan^{-1}(\sqrt{z}) = -2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right) /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0888.01

$$\tan^{-1}(\sqrt{z}) = 2\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}\csc^{-1}\left(\sqrt{\frac{2\sqrt{z+1}}{\sqrt{z+1}-1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\csc^{-1}\left(\sqrt{2}\,(1+z)^{1/4}\Big/\sqrt{\sqrt{1+z}+\sqrt{z}}\right)$

01.14.27.0889.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) - \frac{\pi}{2} /; z \notin (-\infty, -1)$$

01.14.27.0890.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{3\pi}{2} - 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0891.01

$$\tan^{-1}\left(\sqrt{z}\right) = \left(\frac{1}{2} - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right)\pi + 2\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\csc^{-1}\left(\sqrt{2}\,(1+z)^{1/4} \Big/ \sqrt{\sqrt{1+z}-\sqrt{z}}\right)$

01.14.27.0892.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\csc^{-1}\left(\sqrt{2\sqrt{1+z}\Big/\left(\sqrt{1+z}+\sqrt{z}\right)}\right)$

01.14.27.0893.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right) - \frac{\pi}{2} /; z \notin (-\infty, -1)$$

01.14.27.0894.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{3\pi}{2} - 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0895.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi\left(-\sqrt{z+1}\,\sqrt{\frac{1}{z+1}} + \frac{1}{2}\right) + 2\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\csc^{-1}\left(\sqrt{2\sqrt{1+z}\Big/\left(\sqrt{1+z}-\sqrt{z}\right)}\right)$

01.14.27.0896.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\frac{1+z}{1-z}\right)$

01.14.27.0897.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4} + \frac{1}{2}\csc^{-1}\left(\frac{1+z}{1-z}\right) /; |\arg(z)| < \pi$$

01.14.27.0898.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\csc^{-1}\left(\frac{1+z}{1-z}\right) - \frac{3\pi}{4} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0899.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{1}{2}\csc^{-1}\left(\frac{1+z}{1-z}\right) - \frac{\pi}{4} /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0900.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4}\left(2\sqrt{z}\sqrt{\frac{1}{z}} - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\right) + \frac{z\sqrt{-z-1}}{2\sqrt{-z(z+1)}}\sqrt{\frac{1}{z}}\csc^{-1}\left(\frac{1+z}{1-z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\frac{z+1}{z-1}\right)$

01.14.27.0901.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4} - \frac{1}{2}\csc^{-1}\left(\frac{z+1}{z-1}\right) /; |\arg(z)| < \pi$$

01.14.27.0902.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{1}{2}\csc^{-1}\left(\frac{z+1}{z-1}\right) - \frac{3\pi}{4} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0903.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\csc^{-1}\left(\frac{z+1}{z-1}\right) - \frac{\pi}{4} /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0904.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4}\left(2\sqrt{z}\sqrt{\frac{1}{z}} - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\right) - \frac{z\sqrt{-z-1}}{2\sqrt{-z(z+1)}}\sqrt{\frac{1}{z}}\csc^{-1}\left(\frac{z+1}{z-1}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\frac{z+1}{2\sqrt{z}}\right)$

01.14.27.0905.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - \frac{1}{2}\csc^{-1}\left(\frac{z+1}{2\sqrt{z}}\right) /; |z| < 1 \bigwedge z \notin (-1, 0)$$

01.14.27.0906.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{1}{2}\csc^{-1}\left(\frac{z+1}{2\sqrt{z}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0907.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\sqrt{z}\sqrt{\frac{1}{z}} - \frac{1}{2}\csc^{-1}\left(\frac{z+1}{2\sqrt{z}}\right) \;/;\; |z| < 1$$

01.14.27.0908.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\csc^{-1}\left(\frac{z+1}{2\sqrt{z}}\right) \;/;\; |z| > 1$$

01.14.27.0909.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4}\left(-\frac{z-1}{z+1}\sqrt{\left(\frac{z+1}{z-1}\right)^2} + 2\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 1\right) - \frac{1-z}{2(z+1)}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\csc^{-1}\left(\frac{z+1}{2\sqrt{z}}\right) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\sqrt{1+z}\right)$

01.14.27.0910.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \csc^{-1}\left(\sqrt{1+z}\right) \;/;\; z \notin (-1, 0)$$

01.14.27.0911.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \csc^{-1}\left(\sqrt{1+z}\right) - \pi \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0912.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \csc^{-1}\left(\sqrt{1+z}\right) - \frac{\pi}{2}\left(1 - \sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right)$

01.14.27.0913.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - \csc^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) \;/;\; |\arg(z)| < \pi$$

01.14.27.0914.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\csc^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0915.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \csc^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0916.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{1}{2}\sqrt{z}\sqrt{\frac{1}{z}}\,\pi - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\csc^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right)$

01.14.27.0917.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2} - \csc^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right) /; |\arg(z)| < \pi$$

01.14.27.0918.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \csc^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0919.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\sqrt{-z}\sqrt{-z-1}}{\sqrt{z}}\sqrt{\frac{1}{z+1}}\csc^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right) + \frac{\pi}{2}\sqrt{\frac{1}{z}}\sqrt{z}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\sqrt{\frac{z+1}{z}}\right)$

01.14.27.0920.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2} - \csc^{-1}\left(\sqrt{\frac{z+1}{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.0921.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \csc^{-1}\left(\sqrt{\frac{z+1}{z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0922.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{1}{2}\sqrt{z}\sqrt{\frac{1}{z}}\,\pi - \sqrt{z}\sqrt{\frac{1}{z}}\csc^{-1}\left(\sqrt{\frac{z+1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\sqrt{2}\,(1+z)^{1/4} \middle/ \sqrt{\sqrt{1+z}+1}\right)$

01.14.27.0923.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+1}}\right) - \frac{\pi}{2} /; z \notin (-1, 0)$$

01.14.27.0924.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+1}}\right) - \frac{3\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0925.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 2\right) + 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\sqrt{2}\,(1+z)^{1/4} \big/ \sqrt{\sqrt{1+z}-1}\right)$

01.14.27.0926.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-1}}\right) /; z \notin (-1, 0)$$

01.14.27.0927.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{\pi}{2} - 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-1}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0928.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\sqrt{2\sqrt{1+z} \big/ \left(\sqrt{1+z}+1\right)}\right)$

01.14.27.0929.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right) - \frac{\pi}{2} /; z \notin (-1, 0)$$

01.14.27.0930.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right) - \frac{3\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0931.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 2\right) + 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\sqrt{2\sqrt{1+z} \big/ \left(\sqrt{1+z}-1\right)}\right)$

01.14.27.0932.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right) /; z \notin (-1, 0)$$

01.14.27.0933.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{\pi}{2} + 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0934.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\frac{\pi}{2} - 2\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\sqrt{2}\,(1+z)^{1/4}\Big/\sqrt{\sqrt{1+z}+\sqrt{z}}\right)$

01.14.27.0935.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \pi - 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) /; |\arg(z)| < \pi$$

01.14.27.0936.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0937.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) - \pi /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.0938.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(-\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} + 2\sqrt{\frac{1}{z}}\sqrt{z} + 1\right) - 2\sqrt{z+1}\sqrt{\frac{1}{z+1}}\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\sqrt{2}\,(1+z)^{1/4}\Big/\sqrt{\sqrt{1+z}-\sqrt{z}}\right)$

01.14.27.0939.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right) /; z \notin (-1, 0)$$

01.14.27.0940.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right) - \pi /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0941.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\csc^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right) - \frac{\pi}{2}\left(1 - \sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\sqrt{2\sqrt{1+z}\,/\left(\sqrt{1+z}+\sqrt{z}\right)}\right)$

01.14.27.0942.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \pi - 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right) /;\ |\arg(z)| < \pi$$

01.14.27.0943.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right) /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0944.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right) - \pi /;\ (z \in \mathbb{R} \land z < -1)$$

01.14.27.0945.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(-\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} + 2\sqrt{\frac{1}{z}}\sqrt{z} + 1\right) - 2\sqrt{z+1}\sqrt{\frac{1}{z+1}}\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\sqrt{2\sqrt{1+z}\,/\left(\sqrt{1+z}-\sqrt{z}\right)}\right)$

01.14.27.0946.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-\sqrt{z}}}\right) /;\ z \notin (-1, 0)$$

01.14.27.0947.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-\sqrt{z}}}\right) - \pi /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0948.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 1\right) + 2\csc^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$ and $\csc^{-1}\left(\sqrt{z}\right)$

01.14.27.0949.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = \frac{\pi}{2} - \csc^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$ and $\csc^{-1}\left(\sqrt{z}\right)$

01.14.27.0950.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) == \csc^{-1}\left(\sqrt{z}\right) /; z \notin (0, 1)$$

01.14.27.0951.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) == \csc^{-1}\left(\sqrt{z}\right) - \pi /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0952.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) == \frac{\pi}{2}\left(\sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}} - 1\right) + \csc^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$ and $\csc^{-1}\left(\sqrt{z}\right)$

01.14.27.0953.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) == \csc^{-1}\left(\sqrt{z}\right) /; z \notin (-\infty, 1)$$

01.14.27.0954.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) == \pi - \csc^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0955.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) == -\csc^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0956.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) == \sqrt{z-1}\sqrt{\frac{1}{z-1}}\csc^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2}\left(\sqrt{-z}\sqrt{-\frac{1}{z}}\sqrt{1-z}\sqrt{\frac{1}{1-z}} - 1\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0957.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \frac{\pi}{2} - \csc^{-1}\left(\frac{1}{\sqrt{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.0958.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = -\frac{\pi}{2} - \csc^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0959.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \frac{\pi}{2} \sqrt{z} \sqrt{\frac{1}{z}} - \csc^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$ and $\csc^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0960.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \frac{\pi}{2} - \csc^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.0961.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = -\frac{\pi}{2} + \csc^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0962.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \frac{1}{2} \pi \sqrt{z} \sqrt{\frac{1}{z}} - \sqrt{z} \sqrt{\frac{1}{z}} \csc^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$ and $\csc^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0963.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \csc^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2} /; z \notin (-\infty, 1)$$

01.14.27.0964.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \csc^{-1}\left(\frac{1}{\sqrt{z}}\right) + \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0965.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \frac{\pi}{2} - \csc^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0966.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \frac{\sqrt{z}\sqrt{z-1}}{\sqrt{1-z}\sqrt{-z}}\left(\frac{1}{2}\pi\sqrt{z}\sqrt{\frac{1}{z}} - \csc^{-1}\left(\frac{1}{\sqrt{z}}\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$ and $\csc^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0967.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \csc^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} /; z \notin (-\infty, 1)$$

01.14.27.0968.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = -\csc^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 1)$$

01.14.27.0969.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \sqrt{z-1}\sqrt{\frac{1}{z-1}}\left(\csc^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$ and $\csc^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0970.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \frac{\pi}{2} - \csc^{-1}\left(\frac{1}{\sqrt{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.0971.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \csc^{-1}\left(\frac{1}{\sqrt{z}}\right) + \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0972.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \frac{\pi}{2} - \sqrt{z}\sqrt{\frac{1}{z}}\csc^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$ and $\csc^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0973.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) == \frac{\pi}{2} - \csc^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$ and $\csc^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0974.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) == \csc^{-1}\left(\frac{1}{\sqrt{z}}\right) /; z \notin (1, \infty)$$

01.14.27.0975.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) == \csc^{-1}\left(\frac{1}{\sqrt{z}}\right) - \pi /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0976.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) == \frac{\pi}{2}\left(\sqrt{1-z}\sqrt{\frac{1}{1-z}} - 1\right) + \csc^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$ and $\csc^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0977.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) == \csc^{-1}\left(\sqrt{\frac{1}{z}}\right) /; z \notin (-\infty, 0) \bigwedge z \notin (1, \infty)$$

01.14.27.0978.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) == \csc^{-1}\left(\sqrt{\frac{1}{z}}\right) - \pi /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0979.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) == -\csc^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0980.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) == \frac{\pi}{2}\left(\sqrt{1-z}\sqrt{\frac{1}{1-z}} - 1\right) + \sqrt{\frac{1}{z}}\sqrt{z}\csc^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$ and $\csc^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0981.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = -\csc^{-1}\left(\frac{1}{\sqrt{z}}\right) /; z \notin (0, \infty)$$

01.14.27.0982.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \csc^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0983.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \pi - \csc^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0984.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\pi}{2}\left(1 - \sqrt{1-z}\sqrt{\frac{1}{1-z}}\right) + \frac{\sqrt{1-z}\sqrt{-z}}{\sqrt{z-1}\sqrt{z}} \csc^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$ and $\csc^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0985.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = -\csc^{-1}\left(\sqrt{\frac{1}{z}}\right) /; \operatorname{Im}(z) \neq 0$$

01.14.27.0986.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \csc^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < 1)$$

01.14.27.0987.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \pi - \csc^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0988.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\pi}{2}\left(1 - \sqrt{1-z}\sqrt{\frac{1}{1-z}}\right) + \frac{\sqrt{1-z}\sqrt{-z}}{\sqrt{z-1}}\sqrt{\frac{1}{z}} \csc^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$ and $\csc^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.0989.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \csc^{-1}\left(\frac{1}{\sqrt{z}}\right) /; z \notin (1, \infty)$$

01.14.27.0990.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \pi - \csc^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0991.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2}\left(1 - \sqrt{1-z}\sqrt{\frac{1}{1-z}}\right) + \sqrt{\frac{1}{1-z}}\sqrt{1-z}\csc^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$ and $\csc^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.0992.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \csc^{-1}\left(\sqrt{\frac{1}{z}}\right) /; z \notin (-\infty, 0) \bigwedge z \notin (1, \infty)$$

01.14.27.0993.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \pi - \csc^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0994.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = -\csc^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.0995.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2}\left(1 - \sqrt{1-z}\sqrt{\frac{1}{1-z}}\right) + \sqrt{\frac{1-z}{z}}\sqrt{\frac{z}{1-z}}\csc^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+c\,z}}{\sqrt{1-c\,z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{1-z}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.0996.01

$$\tan^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{1-z}}\right) = \frac{\pi}{4} + \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; z \notin (1, \infty)$$

01.14.27.0997.01

$$\tan^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{1-z}}\right) = \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) - \frac{3\pi}{4} /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.0998.01

$$\tan^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{1-z}}\right) = \frac{\pi}{4}\left(2\sqrt{\frac{1}{1-z}}\sqrt{1-z}-1\right)+\frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.0999.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right) = \frac{\pi}{4}-\frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; z \notin (-\infty, -1)$$

01.14.27.1000.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right) = -\frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right)-\frac{3\pi}{4} /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1001.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z+1}}\right) = \frac{\pi}{4}\left(2\sqrt{\frac{1}{z+1}}\sqrt{z+1}-1\right)-\frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-1+c\,z}}{\sqrt{-1-c\,z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{z-1}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1002.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = -\frac{\pi}{4}-\frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; z \notin (-1, \infty)$$

01.14.27.1003.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{3\pi}{4}-\frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1004.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{\pi}{4}+\frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land -1 < z < 1)$$

01.14.27.1005.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{\sqrt{-z-1}\sqrt{1-z}}{\sqrt{z-1}\sqrt{z+1}}\left(\frac{\pi}{4}\left(2\sqrt{\frac{1}{1-z}}\sqrt{1-z}-1\right)+\frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1006.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = -\frac{\pi}{4}+\frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; z \notin (-\infty, 1)$$

01.14.27.1007.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{3\pi}{4} + \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1008.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{\pi}{4} - \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land -1 < z < 1)$$

01.14.27.1009.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{\sqrt{z-1}\sqrt{z+1}}{\sqrt{-z-1}\sqrt{1-z}}\left(\frac{\pi}{4}\left(2\sqrt{\frac{1}{z+1}}\sqrt{z+1} - 1\right) - \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1+c\,z}{1-c\,z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1010.01

$$\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right) = \frac{\pi}{4} + \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; z \notin (1, \infty)$$

01.14.27.1011.01

$$\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right) = \frac{3\pi}{4} - \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1012.01

$$\tan^{-1}\left(\sqrt{\frac{z+1}{1-z}}\right) = \frac{\pi}{4}\left(2 - \sqrt{1-z}\sqrt{\frac{1}{1-z}}\right) + \frac{1}{2}\sqrt{\frac{1}{1-z}}\sqrt{1-z}\csc^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1013.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = \frac{\pi}{4} - \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; z \notin (-\infty, -1)$$

01.14.27.1014.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = \frac{3\pi}{4} + \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1015.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z+1}}\right) = \frac{\pi}{4}\left(2 - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\right) - \frac{1}{2}\sqrt{z+1}\sqrt{\frac{1}{z+1}}\csc^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{z^2-1}\right)$

Involving $\tan^{-1}\left(\sqrt{z^2-1}\right)$ and $\csc^{-1}(z)$

01.14.27.1016.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = \frac{\pi}{2} - \csc^{-1}(z) \;/;\; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1017.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = \csc^{-1}(z) + \frac{\pi}{2} \;/;\; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.0024.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = \frac{\pi}{2} - \frac{\sqrt{z^2}}{z} \csc^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right)$ and $\csc^{-1}(z)$

01.14.27.1018.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \csc^{-1}(z) \;/;\; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1019.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = -\csc^{-1}(z) \;/;\; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.1020.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \csc^{-1}(z) - \pi \;/;\; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1021.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = -\pi - \csc^{-1}(z) \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.0025.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \frac{\sqrt{z^2}}{z} \csc^{-1}(z) + \frac{\pi i}{2}\left(\frac{\sqrt{-z-1}}{\sqrt{z+1}} + \frac{\sqrt{z-1}}{\sqrt{1-z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right)$ and $\csc^{-1}(z)$

01.14.27.1022.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \csc^{-1}(z) \;/;\; -\frac{\pi}{2} \leq \arg(z) < 0 \bigvee 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1023.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = -\csc^{-1}(z) \;/;\; \frac{\pi}{2} \leq \arg(z) < \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.1024.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \pi - \csc^{-1}(z) \;/;\; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1025.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \pi + \csc^{-1}(z) \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1026.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \sqrt{z^2-1}\,\sqrt{\frac{1}{z^2-1}}\left(\frac{\sqrt{z^2}}{z}\csc^{-1}(z) + \frac{i\,\pi}{2}\left(\frac{\sqrt{-z-1}}{\sqrt{z+1}} + \frac{\sqrt{z-1}}{\sqrt{1-z}}\right)\right)$$

Involving $\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)$

Involving $\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)$ and $\csc^{-1}(z)$

01.14.27.1027.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = \frac{\pi}{2} - \csc^{-1}(z) \;/;\; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1028.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)=-\frac{\pi}{2}-\csc^{-1}(z)\;/;\;\frac{\pi}{2}<\arg(z)\leq\pi\bigvee-\pi<\arg(z)\leq-\frac{\pi}{2}$$

01.14.27.1029.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)=\frac{\pi\sqrt{z^2}}{2\,z}-\csc^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1030.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)=\csc^{-1}\left(\frac{1}{z}\right)\;/;\;z\notin(1,\infty)\bigwedge z\notin(-\infty,-1)$$

01.14.27.1031.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)=\pi+\csc^{-1}\left(\frac{1}{z}\right)\;/;\;(z\in\mathbb{R}\land z<-1)$$

01.14.27.1032.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)=-\pi+\csc^{-1}\left(\frac{1}{z}\right)\;/;\;(z\in\mathbb{R}\land z>1)$$

01.14.27.1033.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)=\csc^{-1}\left(\frac{1}{z}\right)+\frac{\pi}{2}\left(\sqrt{\frac{1}{1-z}}\sqrt{1-z}-\sqrt{\frac{1}{z+1}}\sqrt{z+1}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1034.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)=\csc^{-1}\left(\frac{1}{z}\right)\;/;\;-\frac{\pi}{2}<\arg(z)<0\bigvee 0<\arg(z)\leq\frac{\pi}{2}\bigvee(z\in\mathbb{R}\land 0<z<1)$$

01.14.27.1035.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = -\csc^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1036.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = -\pi - \csc^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1037.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = -\pi + \csc^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1038.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = \frac{z}{\sqrt{z^2}}\left(\frac{\pi}{2}\left(\sqrt{\frac{1}{1-z}}\sqrt{1-z} - \sqrt{\frac{1}{z+1}}\sqrt{z+1}\right) + \csc^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1039.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = -\csc^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1040.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \csc^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1041.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \pi + \csc^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1042.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \pi - \csc^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1043.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \frac{z\sqrt{z^2-1}}{\sqrt{-z^2}\sqrt{1-z^2}}\left(\frac{\pi}{2}\left(\sqrt{\frac{1}{1-z}}\sqrt{1-z} - \sqrt{\frac{1}{z+1}}\sqrt{z+1}\right) + \csc^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1044.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \csc^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1045.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = -\csc^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1046.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \pi + \csc^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1047.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \pi - \csc^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1048.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \frac{\sqrt{1-z^2}}{z}\sqrt{\frac{z^2}{1-z^2}}\left(\frac{\pi}{2}\left(\sqrt{\frac{1}{1-z}}\sqrt{1-z} - \sqrt{\frac{1}{z+1}}\sqrt{z+1}\right) + \csc^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1049.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right) = \frac{\pi}{2} - \csc^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.1050.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right) = -\csc^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} /; \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1051.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right) = \frac{\pi}{2}\sqrt{\frac{1}{z^2}}\ z - \csc^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1052.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \frac{\pi}{2} - \csc^{-1}\left(\frac{1}{z}\right)\ /;\ \mathrm{Re}(z) > 0$$

01.14.27.1053.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \frac{\pi}{2} + \csc^{-1}\left(\frac{1}{z}\right)\ /;\ \mathrm{Re}(z) < 0$$

01.14.27.1054.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \csc^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2}\ /;\ (i\, z \in \mathbb{R} \land i\, z > 0)$$

01.14.27.1055.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = -\csc^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2}\ /;\ (i\, z \in \mathbb{R} \land i\, z < 0)$$

01.14.27.1056.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \frac{\pi}{2}\sqrt{\frac{1}{z^2}}\ \sqrt{z^2} - \frac{z}{\sqrt{z^2}}\csc^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1057.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \csc^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2}\ /;\ -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1058.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = -\csc^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.1059.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \csc^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0) \lor (i\, z \in \mathbb{R} \land i\, z < 0)$$

01.14.27.1060.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \frac{\pi}{2} - \csc^{-1}\left(\frac{1}{z}\right) \;/;\; (z \in \mathbb{R} \land 0 < z < 1) \lor (i\, z \in \mathbb{R} \land i\, z > 0)$$

01.14.27.1061.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \frac{\sqrt{-z^2}}{\sqrt{z^2-1}} \sqrt{\frac{1}{z^2}-1} \left(\frac{\pi}{2} - z\sqrt{\frac{1}{z^2}} \csc^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1062.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = \frac{\pi}{2} - \csc^{-1}\left(\frac{1}{z}\right) \;/;\; -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.1063.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = \csc^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1064.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = \frac{\pi}{2} - z\sqrt{\frac{1}{z^2}} \csc^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1+c\sqrt{1-z^2}}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1065.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right) = \frac{\pi}{2} - \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.1066.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right) = -\frac{\pi}{2} - \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1067.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right) = \frac{\pi z}{2}\sqrt{\frac{1}{z^2}} - \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1-\sqrt{1-z^2}}{z}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1068.01

$$\tan^{-1}\left(\frac{1-\sqrt{1-z^2}}{z}\right) = \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{1+c\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{z}{1+\sqrt{1-z^2}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1069.01

$$\tan^{-1}\left(\frac{z}{1+\sqrt{1-z^2}}\right) = \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1070.01

$$\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right) = \frac{\pi}{2} - \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.1071.01

$$\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right) = -\frac{\pi}{2} - \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1072.01

$$\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right) = \frac{\pi z}{2}\sqrt{\frac{1}{z^2}} - \frac{1}{2}\csc^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{-2+z^2}\right)$

Involving $\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{-2+z^2}\right)$ and $\csc^{-1}(z)$

01.14.27.1073.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) = 2\csc^{-1}(z)\;/;\;\frac{\pi}{4} \leq |\arg(z)| < \frac{\pi}{2} \bigvee |z| > \sqrt{2} \bigwedge \operatorname{Re}(z) > 0$$

01.14.27.1074.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) = -2\csc^{-1}(z)\;/;\;\frac{\pi}{2} < |\arg(z)| \leq \frac{3\pi}{4} \bigvee |z| > \sqrt{2} \bigwedge \operatorname{Re}(z) < 0$$

01.14.27.1075.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) = \pi\left(\theta\left(\left|\sqrt{z^2-1}\right|-1\right)-1\right) + \frac{2\sqrt{z^2}}{z}\csc^{-1}(z)$$

01.14.27.1076.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) = \frac{\pi}{2\sqrt{z^2-1}}\left((z^2-2)\sqrt{\frac{z^4}{z^2-1}}\sqrt{\frac{z^2-1}{z^4}}\sqrt{\frac{z^2-1}{(z^2-2)^2}} - \sqrt{1-\frac{1}{z^2}}\,z\left(\sqrt{\frac{1}{z^2}}\,z - \sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}} + \sqrt{\frac{i}{z}}\sqrt{-i z} - \sqrt{-\frac{i}{z}}\sqrt{i z} + \sqrt{1+\frac{1}{z}}\sqrt{\frac{z}{z+1}}\right)\right) + \frac{2z}{\sqrt{z^2-1}}\sqrt{1-\frac{1}{z^2}}\csc^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{-2+z^2}{2\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{-2+z^2}{2\sqrt{z^2-1}}\right)$ and $\csc^{-1}(z)$

01.14.27.1077.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = \frac{\pi}{2} - 2\csc^{-1}(z) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \le \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1078.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = \frac{\pi}{2} + 2\csc^{-1}(z) /; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.1079.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = 2\csc^{-1}(z) + \frac{3\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1080.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = \frac{3\pi}{2} - 2\csc^{-1}(z) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1081.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = \frac{\pi z}{2\sqrt{z^2-1}}\sqrt{1-\frac{1}{z^2}}\left(\sqrt{\frac{1}{z^2}}\, z - \sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}} + \sqrt{\frac{i}{z}}\sqrt{-i z} - \sqrt{-\frac{i}{z}}\sqrt{i z} + \sqrt{1+\frac{1}{z}}\sqrt{\frac{z}{z+1}}\right) - \frac{2z}{\sqrt{z^2-1}}\sqrt{1-\frac{1}{z^2}}\csc^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{2z\sqrt{1-z^2}}{1-2z^2}\right)$

Involving $\tan^{-1}\left(\frac{2z\sqrt{1-z^2}}{1-2z^2}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1082.01

$$\tan^{-1}\left(\frac{2z\sqrt{1-z^2}}{1-2z^2}\right) = 2\csc^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{4} \le |\arg(z)| < \frac{3\pi}{4}$$

01.14.27.1083.01

$$\tan^{-1}\left(\frac{2z\sqrt{1-z^2}}{1-2z^2}\right) = 2\csc^{-1}\left(\frac{1}{z}\right) - \frac{1}{2}\pi\left(\frac{\sqrt{z^2-1}\;z}{\sqrt{z^4-z^2}} + \sqrt{\frac{1}{z}}\sqrt{\frac{1}{\sqrt{2}\;z-1}}\sqrt{\sqrt{2}\;z-1}\sqrt{z} - \sqrt{-\frac{1}{z}}\sqrt{-z}\sqrt{-\sqrt{2}\;z-1}\sqrt{-\frac{1}{\sqrt{2}\;z+1}} + \frac{\sqrt{z^2}}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right)$ and $\csc^{-1}\left(\frac{1}{z}\right)$

01.14.27.1084.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = \frac{\pi}{2} - 2\csc^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} \le \arg(z) < 0 \bigvee 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1085.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = -\frac{\pi}{2} - 2\csc^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{2} \le \arg(z) < 0 \bigvee -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1086.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = \frac{3\pi}{2} - 2\csc^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1087.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = -\frac{3\pi}{2} - 2\csc^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1088.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = \frac{1}{2}\left(-\sqrt{\frac{1}{1-z}}\sqrt{1-z} + \sqrt{\frac{1}{z+1}}\sqrt{z+1} - \sqrt{-iz}\sqrt{\frac{i}{z}} + \sqrt{-\frac{i}{z}}\sqrt{iz} + \frac{\sqrt{z^2}}{z}\right)\pi - 2\csc^{-1}\left(\frac{1}{z}\right)$$

Involving $\sec^{-1}$

Involving $\tan^{-1}(z)$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\frac{1+z^2}{2z}\right)$

01.14.27.1089.01

$$\tan^{-1}(z) = \frac{1}{2}\left(\frac{\pi}{2} - \sec^{-1}\left(\frac{1+z^2}{2z}\right)\right) /; |z| < 1$$

01.14.27.1090.01

$$\tan^{-1}(z) = \frac{\pi}{4} + \frac{1}{2}\sec^{-1}\left(\frac{1+z^2}{2z}\right) /; |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1091.01

$$\tan^{-1}(z) = \frac{1}{2}\sec^{-1}\left(\frac{1+z^2}{2z}\right) - \frac{3\pi}{4} /; |z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}\right)$$

01.14.27.1092.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\frac{\sqrt{z^2}}{z} - \frac{1}{2}\right) + \frac{1}{2}\sec^{-1}\left(\frac{1+z^2}{2z}\right) /; |z| > 1$$

01.14.27.1093.01

$$\tan^{-1}(z) = \frac{\pi}{4}\left(\frac{\sqrt{z^2}}{z} - \frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\left(\frac{\sqrt{z^2}}{z} - 1\right)\right) - \frac{(1-z)}{2(1+z)}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\sec^{-1}\left(\frac{1+z^2}{2z}\right) /; |z| \neq 1$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\frac{1+z^2}{1-z^2}\right)$

01.14.27.1094.01

$$\tan^{-1}(z) = \frac{1}{2}\sec^{-1}\left(\frac{1+z^2}{1-z^2}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.1095.01

$$\tan^{-1}(z) = -\frac{1}{2}\sec^{-1}\left(\frac{1+z^2}{1-z^2}\right) /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.1096.01

$$\tan^{-1}(z) = -\frac{1}{2}\sec^{-1}\left(\frac{1+z^2}{1-z^2}\right) + \pi /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.1097.01

$$\tan^{-1}(z) = -\pi + \frac{1}{2}\sec^{-1}\left(\frac{1+z^2}{1-z^2}\right) /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.1098.01

$$\tan^{-1}(z) = \frac{\pi}{4}\left(\sqrt{\frac{1}{1-iz}}\sqrt{1-iz} - \sqrt{iz+1}\sqrt{\frac{1}{iz+1}} + \frac{\sqrt{z^2}}{z}\right) + \frac{\sqrt{z^2}\sqrt{z^2+1}}{2z}\sqrt{\frac{1}{z^2+1}}\left(-\frac{\pi}{2} + \sec^{-1}\left(\frac{1+z^2}{1-z^2}\right)\right)$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\frac{z^2+1}{z^2-1}\right)$

01.14.27.1099.01

$$\tan^{-1}(z) = -\frac{1}{2}\sec^{-1}\left(\frac{z^2+1}{z^2-1}\right)+\frac{\pi}{2} \;/;\; \operatorname{Re}(z)>0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.1100.01

$$\tan^{-1}(z) = \frac{1}{2}\sec^{-1}\left(\frac{z^2+1}{z^2-1}\right)-\frac{\pi}{2} \;/;\; \operatorname{Re}(z)<0 \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.1101.01

$$\tan^{-1}(z) = \frac{\pi}{2}+\frac{1}{2}\sec^{-1}\left(\frac{z^2+1}{z^2-1}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.1102.01

$$\tan^{-1}(z) = -\frac{\pi}{2}-\frac{1}{2}\sec^{-1}\left(\frac{z^2+1}{z^2-1}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.1103.01

$$\tan^{-1}(z) = \frac{\pi}{4}\left(\sqrt{\frac{1}{1-i\,z}}\,\sqrt{1-i\,z}-\sqrt{i\,z+1}\,\sqrt{\frac{1}{i\,z+1}}+\frac{\sqrt{z^2}}{z}\right)+\frac{\sqrt{z^2}\,\sqrt{z^2+1}}{2\,z}\sqrt{\frac{1}{z^2+1}}\left(\frac{\pi}{2}-\sec^{-1}\left(\frac{z^2+1}{z^2-1}\right)\right)$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\sqrt{z^2+1}\right)$

01.14.27.1104.01

$$\tan^{-1}(z) = \sec^{-1}\left(\sqrt{z^2+1}\right) \;/;\; -\frac{\pi}{2} < \arg(z) \le \frac{\pi}{2}$$

01.14.27.1105.01

$$\tan^{-1}(z) = -\sec^{-1}\left(\sqrt{z^2+1}\right) \;/;\; \frac{\pi}{2} < \arg(z) \le \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2}$$

01.14.27.1106.01

$$\tan^{-1}(z) = \frac{\sqrt{z^2}}{z}\sec^{-1}\left(\sqrt{z^2+1}\right)$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right)$

01.14.27.1107.01

$$\tan^{-1}(z) = \frac{\pi}{2}-\sec^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right) \;/;\; \operatorname{Re}(z) \ne 0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 1)$$

01.14.27.1108.01

$$\tan^{-1}(z) = \frac{\pi}{2}+\sec^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.1109.01

$$\tan^{-1}(z) = \sec^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right) - \frac{3\pi}{2} /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.1110.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{\frac{1}{z^2+1}} \sqrt{z^2+1} + \sqrt{1-iz} \sqrt{\frac{1}{1-iz}} - \sqrt{iz+1} \sqrt{\frac{1}{iz+1}}\right) - \sqrt{\frac{1}{z^2+1}} \sqrt{z^2+1} \sec^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right)$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right)$

01.14.27.1111.01

$$\tan^{-1}(z) = \frac{\pi}{2} - \sec^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.1112.01

$$\tan^{-1}(z) = \sec^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right) - \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.1113.01

$$\tan^{-1}(z) = \frac{\pi}{2} + \sec^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right) /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.1114.01

$$\tan^{-1}(z) = -\sec^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right) - \frac{\pi}{2} /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.1115.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\frac{1+z^2}{z} \sqrt{\frac{1}{1+z^2}} \sqrt{\frac{z^2}{1+z^2}} + \sqrt{1-iz} \sqrt{\frac{1}{1-iz}} - \sqrt{iz+1} \sqrt{\frac{1}{iz+1}}\right) - \frac{z^2+1}{z} \sqrt{\frac{1}{z^2+1}} \sqrt{\frac{z^2}{z^2+1}} \sec^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right)$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{-z^2}}\right)$

01.14.27.1116.01

$$\tan^{-1}(z) = \frac{\pi}{2} - \sec^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{-z^2}}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.1117.01

$$\tan^{-1}(z) = \sec^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{-z^2}}\right) - \frac{\pi}{2} \;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.1118.01

$$\tan^{-1}(z) = \frac{\pi}{2} + \sec^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{-z^2}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.1119.01

$$\tan^{-1}(z) = -\frac{\pi}{2} - \sec^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{-z^2}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.1120.01

$$\tan^{-1}(z) = \frac{1}{2}\left(\sqrt{\frac{1}{z^2}}\, z + \sqrt{\frac{1}{1-i\,z}}\,\sqrt{1-i\,z} - \sqrt{i\,z+1}\,\sqrt{\frac{1}{i\,z+1}}\right)\pi - z\,\sqrt{\frac{1}{z^2}}\,\sec^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{-z^2}}\right)$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right)$

01.14.27.1121.01

$$\tan^{-1}(z) = \frac{\pi}{2} - \sec^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right) \;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.1122.01

$$\tan^{-1}(z) = \sec^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right) - \frac{\pi}{2} \;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.1123.01

$$\tan^{-1}(z) = \frac{\pi}{2} + \sec^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.1124.01

$$\tan^{-1}(z) = -\frac{\pi}{2} - \sec^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.1125.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{\frac{1}{1-i\,z}}\,\sqrt{1-i\,z} - \sqrt{i\,z+1}\,\sqrt{\frac{1}{i\,z+1}} + \frac{\sqrt{z}\,\sqrt{-z^2-1}}{\sqrt{-z}}\,\sqrt{\frac{1}{z^2+1}}\right) - \frac{\sqrt{z}\,\sqrt{-z^2-1}}{\sqrt{-z}}\,\sqrt{\frac{1}{z^2+1}}\,\sec^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right)$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\sqrt{2}\,(1+z^2)^{1/4}\Big/\sqrt{\sqrt{1+z^2}+1}\right)$

01.14.27.1126.01

$$\tan^{-1}(z) = 2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}+1}}\right) /;\ -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1127.01

$$\tan^{-1}(z) = -2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}+1}}\right) /;\ \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.1128.01

$$\tan^{-1}(z) = \frac{2\sqrt{z^2}}{z}\,\sec^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\sqrt{2}\,(1+z^2)^{1/4}\Big/\sqrt{\sqrt{1+z^2}-1}\right)$

01.14.27.1129.01

$$\tan^{-1}(z) = \pi - 2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}-1}}\right) /;\ -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1130.01

$$\tan^{-1}(z) = 2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}-1}}\right) - \pi /;\ \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.1131.01

$$\tan^{-1}(z) = \frac{\sqrt{z^2}}{z}\left(\pi - 2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}-1}}\right)\right)$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\sqrt{2\sqrt{1+z^2}\Big/\left(\sqrt{1+z^2}+1\right)}\right)$

01.14.27.1132.01

$$\tan^{-1}(z) = 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}+1}}\right)\;/;\; -\frac{\pi}{2} < \arg(z) \le \frac{\pi}{2}$$

01.14.27.1133.01

$$\tan^{-1}(z) = -2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}+1}}\right)\;/;\; \frac{\pi}{2} < \arg(z) \le \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2}$$

01.14.27.1134.01

$$\tan^{-1}(z) = 2\,\frac{\sqrt{z^2}}{z}\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\sqrt{2\sqrt{1+z^2}\Big/\left(\sqrt{1+z^2}-1\right)}\right)$

01.14.27.1135.01

$$\tan^{-1}(z) = \pi - 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}-1}}\right)\;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.1136.01

$$\tan^{-1}(z) = 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{\sqrt{z^2+1}-1}}\right) - \pi\;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.1137.01

$$\tan^{-1}(z) = \frac{\sqrt{z}\,\sqrt{-z^2-1}}{\sqrt{-z}\,\sqrt{z^2+1}}\left(\pi - 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{\sqrt{z^2+1}-1}}\right)\right)$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\sqrt{2}\,(1+z^2)^{1/4}\Big/\sqrt{\sqrt{1+z^2}+z}\right)$

01.14.27.1138.01

$$\tan^{-1}(z) = -2\sec^{-1}\left(\frac{\sqrt{2}\left(1+z^2\right)^{1/4}}{\sqrt{\sqrt{1+z^2}+z}}\right)+\frac{\pi}{2} /; i z \notin (-\infty, -1)$$

01.14.27.1139.01

$$\tan^{-1}(z) = \frac{\pi}{2}+2\sec^{-1}\left(\frac{\sqrt{2}\left(1+z^2\right)^{1/4}}{\sqrt{\sqrt{1+z^2}+z}}\right) /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.1140.01

$$\tan^{-1}(z) = \frac{\pi}{2}-2\sqrt{i z+1}\sqrt{\frac{1}{i z+1}}\sec^{-1}\left(\frac{\sqrt{2}\left(1+z^2\right)^{1/4}}{\sqrt{\sqrt{1+z^2}+z}}\right)$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\sqrt{2}\left(1+z^2\right)^{1/4}\Big/\sqrt{\sqrt{1+z^2}-z}\right)$

01.14.27.1141.01

$$\tan^{-1}(z) = 2\sec^{-1}\left(\frac{\sqrt{2}\left(1+z^2\right)^{1/4}}{\sqrt{\sqrt{1+z^2}-z}}\right)-\frac{\pi}{2} /; i z \notin (1, \infty)$$

01.14.27.1142.01

$$\tan^{-1}(z) = -\frac{\pi}{2}-2\sec^{-1}\left(\frac{\sqrt{2}\left(1+z^2\right)^{1/4}}{\sqrt{\sqrt{1+z^2}-z}}\right) /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.1143.01

$$\tan^{-1}(z) = 2\sqrt{1-i z}\sqrt{\frac{1}{1-i z}}\sec^{-1}\left(\frac{\sqrt{2}\left(1+z^2\right)^{1/4}}{\sqrt{\sqrt{1+z^2}-z}}\right)-\frac{\pi}{2}$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\sqrt{2\sqrt{1+z^2}\Big/\left(\sqrt{1+z^2}+z\right)}\right)$

01.14.27.1144.01

$$\tan^{-1}(z) = -2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}+z}}\right) + \frac{\pi}{2} /; i\,z \notin (-\infty, -1)$$

01.14.27.1145.01

$$\tan^{-1}(z) = 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}+z}}\right) + \frac{\pi}{2} /; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.1146.01

$$\tan^{-1}(z) = \frac{\pi}{2} - 2\sqrt{i\,z+1}\sqrt{\frac{1}{i\,z+1}}\sec^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{z+\sqrt{z^2+1}}}\right)$$

Involving $\tan^{-1}(z)$ and $\sec^{-1}\left(\sqrt{2\sqrt{1+z^2}\Big/\left(\sqrt{1+z^2}-z\right)}\right)$

01.14.27.1147.01

$$\tan^{-1}(z) = 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}-z}}\right) - \frac{\pi}{2} /; i\,z \notin (1, \infty)$$

01.14.27.1148.01

$$\tan^{-1}(z) = -2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}-z}}\right) - \frac{\pi}{2} /; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.1149.01

$$\tan^{-1}(z) = 2\sqrt{1-i\,z}\sqrt{\frac{1}{1-i\,z}}\sec^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{\sqrt{z^2+1}-z}}\right) - \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sec^{-1}\left(\frac{1+z}{1-z}\right)$

01.14.27.1150.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{1}{2}\sec^{-1}\left(\frac{1+z}{1-z}\right) /; z \notin (-\infty, -1)$$

01.14.27.1151.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi - \frac{1}{2}\sec^{-1}\left(\frac{1+z}{1-z}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1152.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{1}{2}\pi\left(1-\sqrt{z+1}\sqrt{\frac{1}{z+1}}\right)+\frac{1}{2}\sqrt{\frac{1}{z+1}}\sqrt{z+1}\sec^{-1}\left(\frac{1+z}{1-z}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sec^{-1}\left(\frac{z+1}{z-1}\right)$

01.14.27.1153.01

$$\tan^{-1}\left(\sqrt{z}\right) == -\frac{1}{2}\sec^{-1}\left(\frac{z+1}{z-1}\right)+\frac{\pi}{2} /;\ z \notin (-\infty, -1)$$

01.14.27.1154.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{\pi}{2}+\frac{1}{2}\sec^{-1}\left(\frac{z+1}{z-1}\right) /;\ (z \in \mathbb{R} \land z < -1)$$

01.14.27.1155.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{\pi}{2}-\frac{1}{2}\sqrt{z+1}\sqrt{\frac{1}{z+1}}\sec^{-1}\left(\frac{z+1}{z-1}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sec^{-1}\left(\frac{z+1}{2\sqrt{z}}\right)$

01.14.27.1156.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{1}{2}\left(\frac{\pi}{2}-\sec^{-1}\left(\frac{z+1}{2\sqrt{z}}\right)\right) /;\ |z| < 1$$

01.14.27.1157.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{1}{2}\left(\frac{\pi}{2}+\sec^{-1}\left(\frac{z+1}{2\sqrt{z}}\right)\right) /;\ |z| > 1$$

01.14.27.1158.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{\pi}{4}-\frac{1-z}{2(z+1)}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\sec^{-1}\left(\frac{z+1}{2\sqrt{z}}\right) /;\ |z| \neq 1$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sec^{-1}\left(\sqrt{z+1}\right)$

01.14.27.1159.01

$$\tan^{-1}\left(\sqrt{z}\right) == \sec^{-1}\left(\sqrt{z+1}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sec^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right)$

01.14.27.1160.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{\pi}{2}-\sec^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) /;\ z \notin (-\infty, -1)$$

01.14.27.1161.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{\pi}{2}+\sec^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) /;\ (z \in \mathbb{R} \land z < -1)$$

01.14.27.1162.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} - \sqrt{\frac{1}{z+1}} \sqrt{z+1} \sec^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sec^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right)$

01.14.27.1163.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} - \sec^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right) /; |\arg(z)| < \pi$$

01.14.27.1164.01

$$\tan^{-1}(\sqrt{z}) = \sec^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1165.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} + \sec^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1166.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2}\left(1 - \sqrt{z+1} \sqrt{\frac{1}{z+1}} + \sqrt{\frac{1}{z}} \sqrt{z}\right) - \sqrt{\frac{1}{z}} \sqrt{z} \sec^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sec^{-1}\left(\sqrt{\frac{z+1}{z}}\right)$

01.14.27.1167.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} - \sec^{-1}\left(\sqrt{\frac{z+1}{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.1168.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} + \sec^{-1}\left(\sqrt{\frac{z+1}{z}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1169.01

$$\tan^{-1}(\sqrt{z}) = -\frac{\pi}{2} + \sec^{-1}\left(\sqrt{\frac{z+1}{z}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1170.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} \sqrt{z} \sqrt{\frac{1}{z}} \sqrt{z+1} \sqrt{\frac{1}{z+1}} - \sqrt{\frac{1}{z}} \sqrt{z} \sec^{-1}\left(\sqrt{\frac{z+1}{z}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sec^{-1}\left(\sqrt{2}\,(1+z)^{1/4} \Big/ \sqrt{\sqrt{z+1}+1}\right)$

01.14.27.1171.01

$$\tan^{-1}\left(\sqrt{z}\right) == 2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{z+1}+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sec^{-1}\left(\sqrt{2}\,(1+z)^{1/4}\Big/\sqrt{\sqrt{z+1}-1}\right)$

01.14.27.1172.01

$$\tan^{-1}\left(\sqrt{z}\right) == \pi - 2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{z+1}-1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sec^{-1}\left(\sqrt{2\sqrt{1+z}\Big/\left(\sqrt{1+z}+1\right)}\right)$

01.14.27.1173.01

$$\tan^{-1}\left(\sqrt{z}\right) == 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sec^{-1}\left(\sqrt{2\sqrt{1+z}\Big/\left(\sqrt{1+z}-1\right)}\right)$

01.14.27.1174.01

$$\tan^{-1}\left(\sqrt{z}\right) == \pi - 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right) /;\ z \notin (-1,\ 0)$$

01.14.27.1175.01

$$\tan^{-1}\left(\sqrt{z}\right) == -\pi + 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right) /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1176.01

$$\tan^{-1}\left(\sqrt{z}\right) == \sqrt{\frac{z}{z+1}}\,\sqrt{\frac{z+1}{z}}\left(\pi - 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{z+1}}{\sqrt{z+1}-1}}\right)\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sec^{-1}\left(\sqrt{2}\,\sqrt[4]{z+1}\Big/\sqrt{\sqrt{1+z}+\sqrt{z}}\right)$

01.14.27.1177.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{\pi}{2} - 2\sec^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{z+1}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) /;\ z \notin (-\infty,\ -1)$$

01.14.27.1178.01

$$\tan^{-1}(\sqrt{z}) == \frac{\pi}{2} + 2\sec^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{z+1}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1179.01

$$\tan^{-1}(\sqrt{z}) == \frac{\pi}{2} - 2\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\sec^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{z+1}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sec^{-1}\left(\sqrt{2}\,\sqrt[4]{z+1} \Big/ \sqrt{\sqrt{1+z}-\sqrt{z}}\right)$

01.14.27.1180.01

$$\tan^{-1}(\sqrt{z}) == -\frac{\pi}{2} + 2\sec^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{z+1}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sec^{-1}\left(\sqrt{2\sqrt{1+z}\,/\left(\sqrt{1+z}+\sqrt{z}\right)}\right)$

01.14.27.1181.01

$$\tan^{-1}(\sqrt{z}) == -2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right) + \frac{\pi}{2} /; z \notin (-\infty, -1)$$

01.14.27.1182.01

$$\tan^{-1}(\sqrt{z}) == \frac{\pi}{2} + 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1183.01

$$\tan^{-1}(\sqrt{z}) == \frac{\pi}{2} - 2\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\sec^{-1}\left(\sqrt{2\sqrt{1+z}\,/\left(\sqrt{1+z}-\sqrt{z}\right)}\right)$

01.14.27.1184.01

$$\tan^{-1}(\sqrt{z}) == -\frac{\pi}{2} + 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\frac{1+z}{1-z}\right)$

01.14.27.1185.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - \frac{1}{2}\sec^{-1}\left(\frac{1+z}{1-z}\right) /; |\arg(z)| < \pi$$

01.14.27.1186.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{1}{2}\sec^{-1}\left(\frac{1+z}{1-z}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1187.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\sec^{-1}\left(\frac{1+z}{1-z}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1188.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\sqrt{z}\sqrt{\frac{1}{z}}\,\pi - \frac{z\sqrt{-z-1}}{2\sqrt{-z(z+1)}}\sqrt{\frac{1}{z}}\sec^{-1}\left(\frac{1+z}{1-z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\frac{z+1}{z-1}\right)$

01.14.27.1189.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\sec^{-1}\left(\frac{z+1}{z-1}\right) /; |\arg(z)| < \pi$$

01.14.27.1190.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\sec^{-1}\left(\frac{z+1}{z-1}\right) - \pi /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1191.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{1}{2}\sec^{-1}\left(\frac{z+1}{z-1}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1192.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 1\right) + \frac{z\sqrt{-z-1}}{2\sqrt{-z(z+1)}}\sqrt{\frac{1}{z}}\sec^{-1}\left(\frac{z+1}{z-1}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\frac{1+z}{2\sqrt{z}}\right)$

01.14.27.1193.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4} + \frac{1}{2}\sec^{-1}\left(\frac{1+z}{2\sqrt{z}}\right) /; |z| < 1 \bigwedge z \notin (-1, 0)$$

01.14.27.1194.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\sec^{-1}\left(\frac{1+z}{2\sqrt{z}}\right) - \frac{3\pi}{4} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1195.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{z}\sqrt{\frac{1}{z}} - \frac{1}{2}\right) + \frac{1}{2}\sec^{-1}\left(\frac{1+z}{2\sqrt{z}}\right) /; |z| < 1$$

01.14.27.1196.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4} - \frac{1}{2}\sec^{-1}\left(\frac{1+z}{2\sqrt{z}}\right) /; |z| > 1$$

01.14.27.1197.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4}\left(2\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 1\right) + \frac{1-z}{2(z+1)}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\sec^{-1}\left(\frac{1+z}{2\sqrt{z}}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\sqrt{1+z}\right)$

01.14.27.1198.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - \sec^{-1}\left(\sqrt{z+1}\right) /; z \notin (-1, 0)$$

01.14.27.1199.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\sec^{-1}\left(\sqrt{z+1}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1200.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - \sec^{-1}\left(\sqrt{z+1}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right)$

01.14.27.1201.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \sec^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.1202.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \sec^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) - \pi /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1203.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\sec^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1204.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\pi\left(\sqrt{z}\sqrt{\frac{1}{z}} - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\right) + \sqrt{\frac{1}{z+1}}\sqrt{z+1}\sec^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{-z}}\right)$

01.14.27.1205.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \sec^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{-z}}\right) /; |\arg(z)| < \pi$$

01.14.27.1206.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -\sec^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{-z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1207.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -\frac{\sqrt{-z}\ \sqrt{-z-1}}{\sqrt{z}} \sqrt{\frac{1}{z+1}}\ \sec^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{-z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\sqrt{\frac{z+1}{z}}\right)$

01.14.27.1208.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \sec^{-1}\left(\sqrt{\frac{z+1}{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.1209.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -\sec^{-1}\left(\sqrt{\frac{z+1}{z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1210.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \sqrt{z}\ \sqrt{\frac{1}{z}}\ \sec^{-1}\left(\sqrt{\frac{z+1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\sqrt{2}\ (1+z)^{1/4} \middle/ \sqrt{\sqrt{1+z}\ +1}\right)$

01.14.27.1211.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -2\sec^{-1}\left(\frac{\sqrt{2}\ (1+z)^{1/4}}{\sqrt{\sqrt{1+z}\ +1}}\right) + \frac{\pi}{2} /; z \notin (-1, 0)$$

01.14.27.1212.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -2\sec^{-1}\left(\frac{\sqrt{2}\ (1+z)^{1/4}}{\sqrt{\sqrt{1+z}\ +1}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1213.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -2\sec^{-1}\left(\frac{\sqrt{2}\ (1+z)^{1/4}}{\sqrt{\sqrt{1+z}\ +1}}\right) + \frac{1}{2}\pi \sqrt{\frac{z}{z+1}}\ \sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\sqrt{2}\ (1+z)^{1/4} \middle/ \sqrt{\sqrt{1+z}\ -1}\right)$

01.14.27.1214.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -\frac{\pi}{2} + 2\sec^{-1}\left(\frac{\sqrt{2}\ (1+z)^{1/4}}{\sqrt{\sqrt{1+z}\ -1}}\right) /; z \notin (-1, 0)$$

01.14.27.1215.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{3\pi}{2} + 2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-1}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1216.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - \pi + 2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\sqrt{2\sqrt{1+z}\,/\left(\sqrt{1+z}+1\right)}\right)$

01.14.27.1217.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right) + \frac{\pi}{2} /; z \notin (-1, 0)$$

01.14.27.1218.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1219.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\sqrt{2\sqrt{1+z}\,/\left(\sqrt{1+z}+1\right)}\right)$

01.14.27.1220.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{\pi}{2} + 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right) /; z \notin (-1, 0)$$

01.14.27.1221.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1222.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\sec^{-1}\left(\sqrt{\frac{2\sqrt{z+1}}{\sqrt{z+1}-1}}\right) - \frac{1}{2}\pi\sqrt{1+\frac{1}{z}}\sqrt{\frac{z}{z+1}}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\sqrt{2}\,(1+z)^{1/4}\Big/\sqrt{\sqrt{1+z}+\sqrt{z}}\right)$

01.14.27.1223.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) /;\ |\arg(z)| < \pi$$

01.14.27.1224.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) - \pi /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1225.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) /;\ (z \in \mathbb{R} \land z < -1)$$

01.14.27.1226.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z}}\,\sqrt{\frac{z}{z+1}} - 1\right) + 2\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\sec^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\sqrt{2}\,(1+z)^{1/4} \big/ \sqrt{\sqrt{1+z}-\sqrt{z}}\right)$

01.14.27.1227.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \pi - 2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right) /;\ z \notin (-1, 0)$$

01.14.27.1228.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right) /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1229.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z}{z+1}}\,\sqrt{\frac{z+1}{z}} + 1\right) - 2\sec^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\sqrt{2\sqrt{1+z} \big/ \left(\sqrt{1+z}+\sqrt{z}\right)}\right)$

01.14.27.1230.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right) /;\ |\arg(z)| < \pi$$

01.14.27.1231.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right) - \pi /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1232.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1233.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 1\right) + 2\sqrt{\frac{1}{z+1}}\sqrt{z+1}\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\sqrt{2\sqrt{1+z}/(\sqrt{1+z}-\sqrt{z})}\right)$

01.14.27.1234.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \pi - 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-\sqrt{z}}}\right) /; z \notin (-1, 0)$$

01.14.27.1235.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\sec^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-\sqrt{z}}}\right) /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1236.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\left(\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} + 1\right)\pi - 2\sec^{-1}\left(\sqrt{\frac{2\sqrt{z+1}}{\sqrt{z+1}-\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$ and $\sec^{-1}\left(\sqrt{z}\right)$

01.14.27.0026.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = \sec^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$ and $\sec^{-1}\left(\sqrt{z}\right)$

01.14.27.1237.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{\pi}{2} - \sec^{-1}\left(\sqrt{z}\right) /; z \notin (0, 1)$$

01.14.27.1238.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = -\sec^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} \,/;\, (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.0027.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{\pi}{2}\sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}} - \sec^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$ and $\sec^{-1}\left(\sqrt{z}\right)$

01.14.27.1239.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \frac{\pi}{2} - \sec^{-1}\left(\sqrt{z}\right) \,/;\, z \notin (-\infty, 1)$$

01.14.27.1240.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \frac{\pi}{2} + \sec^{-1}\left(\sqrt{z}\right) \,/;\, (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1241.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \sec^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} \,/;\, (z \in \mathbb{R} \land z < 0)$$

01.14.27.1242.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \frac{1}{2}\sqrt{z}\sqrt{\frac{1}{z}}\,\pi - \sqrt{z-1}\sqrt{\frac{1}{z-1}}\,\sec^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.1243.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \sec^{-1}\left(\frac{1}{\sqrt{z}}\right) \,/;\, |\arg(z)| < \pi$$

01.14.27.1244.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \sec^{-1}\left(\frac{1}{\sqrt{z}}\right) - \pi \,/;\, (z \in \mathbb{R} \land z < 0)$$

01.14.27.1245.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \sec^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2}\left(1 - \sqrt{z}\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$ and $\sec^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.1246.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \sec^{-1}\left(\sqrt{\frac{1}{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.1247.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = -\sec^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1248.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \sqrt{z}\sqrt{\frac{1}{z}}\sec^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$ and $\sec^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.1249.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = -\sec^{-1}\left(\frac{1}{\sqrt{z}}\right) /; z \notin (-\infty, 1)$$

01.14.27.1250.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \pi - \sec^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1251.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \sec^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1252.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \frac{\sqrt{z}\sqrt{z-1}}{\sqrt{1-z}\sqrt{-z}}\left(\frac{\pi}{2}\left(\sqrt{z}\sqrt{\frac{1}{z}} - 1\right) + \sec^{-1}\left(\frac{1}{\sqrt{z}}\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$ and $\sec^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.1253.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = -\sec^{-1}\left(\sqrt{\frac{1}{z}}\right) /; z \notin (-\infty, 1)$$

01.14.27.1254.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \sec^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < 1)$$

01.14.27.1255.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = -\sqrt{z-1}\,\sqrt{\frac{1}{z-1}}\,\sec^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$ and $\sec^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.1256.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \sec^{-1}\left(\frac{1}{\sqrt{z}}\right) /; |\arg(z)| < \pi$$

01.14.27.1257.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \pi - \sec^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1258.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \frac{\pi}{2}\left(1 - \sqrt{z}\,\sqrt{\frac{1}{z}}\right) + \sqrt{\frac{1}{z}}\,\sqrt{z}\,\sec^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$ and $\sec^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.1259.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \sec^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$ and $\sec^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.1260.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{\pi}{2} - \sec^{-1}\left(\frac{1}{\sqrt{z}}\right) /; z \notin (1, \infty)$$

01.14.27.1261.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = -\sec^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1262.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{1}{2} \pi \sqrt{1-z} \sqrt{\frac{1}{1-z}} - \sec^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$ and $\sec^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.1263.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{\pi}{2} - \sec^{-1}\left(\sqrt{\frac{1}{z}}\right) /; z \notin (-\infty, 0) \bigwedge z \notin (1, \infty)$$

01.14.27.1264.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = -\sec^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1265.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \sec^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1266.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{\pi}{2}\left(\sqrt{z} \sqrt{\frac{1}{z}} + \sqrt{1-z} \sqrt{\frac{1}{1-z}} - 1\right) - \sqrt{\frac{1}{z}} \sqrt{z} \sec^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$ and $\sec^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.1267.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \sec^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2} /; z \notin (0, \infty)$$

01.14.27.1268.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\pi}{2} - \sec^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1269.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\pi}{2} + \sec^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1270.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = -\frac{\sqrt{1-z}\,\sqrt{-z}}{\sqrt{z-1}\,\sqrt{z}} \sec^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi\sqrt{-z}}{2}\sqrt{-\frac{1}{z}}$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$ and $\sec^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.1271.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \sec^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} /; \operatorname{Im}(z) \neq 0$$

01.14.27.1272.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\pi}{2} - \sec^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z < 1)$$

01.14.27.1273.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\pi}{2} + \sec^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1274.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\pi}{2}\left(1 + \frac{\sqrt{1-z}\,\sqrt{-z}}{\sqrt{-1+z}}\sqrt{\frac{1}{z}} - \sqrt{1-z}\sqrt{\frac{1}{1-z}}\right) - \frac{\sqrt{1-z}\,\sqrt{-z}}{\sqrt{z-1}}\sqrt{\frac{1}{z}} \sec^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$ and $\sec^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.1275.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2} - \sec^{-1}\left(\frac{1}{\sqrt{z}}\right) /; z \notin (1, \infty)$$

01.14.27.1276.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2} + \sec^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1277.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2} - \sqrt{1-z}\sqrt{\frac{1}{1-z}} \sec^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$ and $\sec^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.1278.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2} - \sec^{-1}\left(\sqrt{\frac{1}{z}}\right) /; z \notin (-\infty, 0) \bigwedge z \notin (1, \infty)$$

01.14.27.1279.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2} + \sec^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1280.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \sec^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1281.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2}\left(1 + \sqrt{\frac{-z+1}{z}}\sqrt{\frac{z}{-z+1}} - \sqrt{1-z}\sqrt{\frac{1}{1-z}}\right) - \sqrt{\frac{1-z}{z}}\sqrt{\frac{z}{1-z}}\sec^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+c z}}{\sqrt{1-c z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{1-z}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1282.01

$$\tan^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{1-z}}\right) = \frac{\pi}{2} - \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) /; z \notin (1, \infty)$$

01.14.27.1283.01

$$\tan^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{1-z}}\right) = -\frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1284.01

$$\tan^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{1-z}}\right) = \frac{\pi}{2}\sqrt{\frac{1}{1-z}}\sqrt{1-z} - \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1285.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right) = \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) /; z \notin (-\infty, -1)$$

01.14.27.1286.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right) = \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) - \pi \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1287.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right) = \frac{\pi}{2}\left(\sqrt{z+1}\sqrt{\frac{1}{z+1}} - 1\right) + \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-1+c\,z}}{\sqrt{-1-c\,z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{z-1}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1288.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = -\frac{\pi}{2} + \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) \;/;\; z \notin (-1, \infty)$$

01.14.27.1289.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{\pi}{2} + \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1290.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{\pi}{2} - \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) \;/;\; (z \in \mathbb{R} \land -1 < z < 1)$$

01.14.27.1291.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{\sqrt{-z-1}\sqrt{1-z}}{\sqrt{z-1}\sqrt{z+1}}\left(\frac{\pi}{2}\sqrt{\frac{1}{1-z}}\sqrt{1-z} - \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1292.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = -\frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) \;/;\; z \notin (-\infty, 1)$$

01.14.27.1293.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \pi - \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1294.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) \;/;\; (z \in \mathbb{R} \land -1 < z < 1)$$

01.14.27.1295.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{\sqrt{z-1}\,\sqrt{z+1}}{\sqrt{-z-1}\,\sqrt{1-z}}\left(\frac{\pi}{2}\left(\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}-1\right)+\frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1+c\,z}{1-c\,z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1296.01

$$\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right) = \frac{\pi}{2}-\frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) /; z \notin (1, \infty)$$

01.14.27.1297.01

$$\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right) = \frac{\pi}{2}+\frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1298.01

$$\tan^{-1}\left(\sqrt{\frac{z+1}{1-z}}\right) = \frac{\pi}{2}-\frac{1}{2}\sqrt{\frac{1}{1-z}}\,\sqrt{1-z}\,\sec^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1299.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) /; z \notin (-\infty, -1)$$

01.14.27.1300.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = \pi-\frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1301.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = \frac{\pi}{2}\left(1-\sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right)+\frac{1}{2}\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\sec^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{z^2-1}\right)$

Involving $\tan^{-1}\left(\sqrt{z^2-1}\right)$ and $\sec^{-1}(z)$

01.14.27.1302.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = \sec^{-1}(z) \text{ /; } -\frac{\pi}{2} < \arg(z) \le \frac{\pi}{2}$$

01.14.27.1303.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = \pi - \sec^{-1}(z) \text{ /; } \frac{\pi}{2} < \arg(z) \le \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2}$$

01.14.27.0028.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = \frac{\pi}{2}\left(1 - \frac{\sqrt{z^2}}{z}\right) + \frac{\sqrt{z^2}}{z}\sec^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right)$ and $\sec^{-1}(z)$

01.14.27.1304.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \frac{\pi}{2} - \sec^{-1}(z) \text{ /; } -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \le \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1305.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \sec^{-1}(z) - \frac{\pi}{2} \text{ /; } \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.1306.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = -\sec^{-1}(z) - \frac{\pi}{2} \text{ /; } (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1307.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = -\frac{3\pi}{2} + \sec^{-1}(z) \text{ /; } (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1308.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \frac{\sqrt{z^2}}{z}\left(\frac{\pi}{2} - \sec^{-1}(z)\right) + \frac{\pi i}{2}\left(\frac{\sqrt{-z-1}}{\sqrt{z+1}} + \frac{\sqrt{z-1}}{\sqrt{1-z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right)$ and $\sec^{-1}(z)$

01.14.27.1309.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \frac{\pi}{2} - \sec^{-1}(z) \;/;\; -\frac{\pi}{2} \leq \arg(z) < 0 \bigvee 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1310.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \sec^{-1}(z) - \frac{\pi}{2} \;/;\; \frac{\pi}{2} \leq \arg(z) < \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.1311.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \frac{\pi}{2} + \sec^{-1}(z) \;/;\; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1312.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \frac{3\pi}{2} - \sec^{-1}(z) \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1313.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \sqrt{z^2-1}\,\sqrt{\frac{1}{z^2-1}}\left(\frac{\sqrt{z^2}}{z}\left(\frac{\pi}{2} - \sec^{-1}(z)\right) + \frac{i\pi}{2}\left(\frac{\sqrt{-z-1}}{\sqrt{z+1}} + \frac{\sqrt{z-1}}{\sqrt{1-z}}\right)\right)$$

Involving $\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)$

Involving $\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)$ and $\sec^{-1}(z)$

01.14.27.1314.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = \sec^{-1}(z) \;/;\; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1315.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = \sec^{-1}(z) - \pi \;/;\; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.1316.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)=\frac{\pi}{2}\left(\frac{\sqrt{z^2}}{z}-1\right)+\sec^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1317.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)=\frac{\pi}{2}-\sec^{-1}\left(\frac{1}{z}\right)\;/;\; z\notin(1,\infty)\bigwedge z\notin(-\infty,-1)$$

01.14.27.1318.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)=\frac{3\pi}{2}-\sec^{-1}\left(\frac{1}{z}\right)\;/;\;(z\in\mathbb{R}\land z<-1)$$

01.14.27.1319.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)=-\frac{\pi}{2}-\sec^{-1}\left(\frac{1}{z}\right)\;/;\;(z\in\mathbb{R}\land z>1)$$

01.14.27.1320.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)=-\sec^{-1}\left(\frac{1}{z}\right)+\frac{\pi}{2}\left(1+\sqrt{\frac{1}{1-z}}\sqrt{1-z}-\sqrt{\frac{1}{z+1}}\sqrt{z+1}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1321.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)=\frac{\pi}{2}-\sec^{-1}\left(\frac{1}{z}\right)\;/;\;-\frac{\pi}{2}<\arg(z)<0\bigvee 0<\arg(z)\le\frac{\pi}{2}\bigvee(z\in\mathbb{R}\land 0<z<1)$$

01.14.27.1322.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)=\sec^{-1}\left(\frac{1}{z}\right)-\frac{\pi}{2}\;/;\;\frac{\pi}{2}<\arg(z)<\pi\bigvee-\pi<\arg(z)\le-\frac{\pi}{2}\bigvee(z\in\mathbb{R}\land -1<z<0)$$

01.14.27.1323.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = \sec^{-1}\left(\frac{1}{z}\right) - \frac{3\pi}{2} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1324.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = -\frac{\pi}{2} - \sec^{-1}\left(\frac{1}{z}\right) \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1325.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = \frac{z}{\sqrt{z^2}}\left(\frac{\pi}{2}\left(1+\sqrt{\frac{1}{1-z}}\sqrt{1-z}-\sqrt{\frac{1}{z+1}}\sqrt{z+1}\right) - \sec^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1326.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \sec^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \le \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1327.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \frac{\pi}{2} - \sec^{-1}\left(\frac{1}{z}\right) \;/;\; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1328.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \frac{3\pi}{2} - \sec^{-1}\left(\frac{1}{z}\right) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1329.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \frac{\pi}{2} + \sec^{-1}\left(\frac{1}{z}\right) \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1330.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \frac{z\sqrt{z^2-1}}{\sqrt{-z^2}\sqrt{1-z^2}}\left(\frac{\pi}{2}\left(1+\sqrt{\frac{1}{1-z}}\sqrt{1-z}-\sqrt{\frac{1}{z+1}}\sqrt{z+1}\right) - \sec^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1331.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \frac{\pi}{2} - \sec^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1332.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \sec^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} /; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1333.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \frac{3\pi}{2} - \sec^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1334.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \frac{\pi}{2} + \sec^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1335.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \frac{\sqrt{1-z^2}}{z} \sqrt{\frac{z^2}{1-z^2}} \left(\frac{\pi}{2}\left(1 + \sqrt{\frac{1}{1-z}} \sqrt{1-z} - \sqrt{\frac{1}{z+1}} \sqrt{z+1}\right) - \sec^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1336.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right) = \sec^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.1337.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right) = \sec^{-1}\left(\frac{1}{z}\right) - \pi /; \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1338.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{z}\right) = \sec^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2}\left(\sqrt{\frac{1}{z^2}}\, z - 1\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1339.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \sec^{-1}\left(\frac{1}{z}\right) /; \operatorname{Re}(z) > 0$$

01.14.27.1340.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \pi - \sec^{-1}\left(\frac{1}{z}\right) /; \operatorname{Re}(z) < 0$$

01.14.27.1341.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = -\sec^{-1}\left(\frac{1}{z}\right) /; (i\, z \in \mathbb{R} \land i\, z > 0)$$

01.14.27.1342.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \sec^{-1}\left(\frac{1}{z}\right) - \pi /; (i\, z \in \mathbb{R} \land i\, z < 0)$$

01.14.27.1343.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{1}{z^2}}\, \sqrt{z^2} - \frac{\sqrt{z^2}}{z}\right) + \frac{z}{\sqrt{z^2}} \sec^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1344.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = -\sec^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1345.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \sec^{-1}\left(\frac{1}{z}\right) - \pi /; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.1346.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \pi - \sec^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land -1 < z < 0) \lor (i\, z \in \mathbb{R} \land i\, z < 0)$$

01.14.27.1347.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \sec^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land 0 < z < 1) \lor (i\, z \in \mathbb{R} \land i\, z > 0)$$

01.14.27.1348.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \frac{\sqrt{-z^2}}{\sqrt{z^2-1}} \sqrt{\frac{1}{z^2}-1} \left(\frac{\pi}{2}\left(1 - z\sqrt{\frac{1}{z^2}}\right) + \sqrt{\frac{1}{z^2}}\, z \sec^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1349.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = \sec^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} \le \arg(z) < \frac{\pi}{2}$$

01.14.27.1350.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = \pi - \sec^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{2} \le \arg(z) \le \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1351.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = \frac{\pi}{2}\left(1 - z\sqrt{\frac{1}{z^2}}\right) + \sqrt{\frac{1}{z^2}}\, z \sec^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1+c\sqrt{1-z^2}}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1352.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right) = \frac{\pi}{4} + \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} \le \arg(z) < \frac{\pi}{2}$$

01.14.27.1353.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right) = \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) - \frac{3\pi}{4} /; \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1354.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}+1}{z}\right) = \frac{\pi}{2}\left(\sqrt{\frac{1}{z^2}}\, z - \frac{1}{2}\right) + \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1-\sqrt{1-z^2}}{z}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1355.01

$$\tan^{-1}\left(\frac{1-\sqrt{1-z^2}}{z}\right) = \frac{\pi}{4} - \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{1+c\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{z}{1+\sqrt{1-z^2}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1356.01

$$\tan^{-1}\left(\frac{z}{1+\sqrt{1-z^2}}\right) = \frac{\pi}{4} - \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1357.01

$$\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right) = \frac{\pi}{4} + \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.1358.01

$$\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right) = \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right) - \frac{3\pi}{4} /; \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1359.01

$$\tan^{-1}\left(\frac{z}{1-\sqrt{1-z^2}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{1}{z^2}}\, z - \frac{1}{2}\right) + \frac{1}{2}\sec^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{-2+z^2}\right)$

Involving $\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{-2+z^2}\right)$ and $\sec^{-1}(z)$

01.14.27.1360.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) = \pi - 2\sec^{-1}(z) /; \frac{\pi}{4} \leq |\arg(z)| < \frac{\pi}{2} \bigvee |z| > \sqrt{2} \bigwedge \operatorname{Re}(z) > 0$$

01.14.27.1361.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) = 2\sec^{-1}(z) - \pi /; \frac{\pi}{2} < |\arg(z)| \leq \frac{3\pi}{4} \bigvee |z| > \sqrt{2} \bigwedge \operatorname{Re}(z) < 0$$

01.14.27.1362.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) = \pi\left(\frac{\sqrt{z^2}}{z} + \theta\left(\left|\sqrt{z^2-1}\right| - 1\right) - 1\right) - \frac{2\sqrt{z^2}}{z}\sec^{-1}(z)$$

01.14.27.1363.01

$$\tan^{-1}\left(\frac{2\sqrt{z^2-1}}{z^2-2}\right) =$$

$$\frac{\pi}{2\sqrt{z^2-1}}\left(-\sqrt{1-\frac{1}{z^2}}\left(\sqrt{\frac{1}{z^2}}\, z - \sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}} + \sqrt{\frac{i}{z}}\sqrt{-i\,z} - \sqrt{-\frac{i}{z}}\sqrt{i\,z} + \sqrt{1+\frac{1}{z}}\sqrt{\frac{z}{z+1}}\right) z + 2\sqrt{1-\frac{1}{z^2}}\, z + \sqrt{\frac{z^2-1}{z^4}}\left(z^2-2\right)\sqrt{\frac{z^2-1}{\left(z^2-2\right)^2}}\sqrt{\frac{z^4}{z^2-1}}\right) - \frac{2z}{\sqrt{z^2-1}}\sqrt{1-\frac{1}{z^2}}\sec^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{-2+z^2}{2\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{-2+z^2}{2\sqrt{z^2-1}}\right)$ and $\sec^{-1}(z)$

01.14.27.1364.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = -\frac{\pi}{2} + 2\sec^{-1}(z) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1365.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = \frac{3\pi}{2} - 2\sec^{-1}(z) /; \frac{\pi}{2} < \arg(z) < \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.1366.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = -2\sec^{-1}(z) + \frac{5\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1367.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = \frac{\pi}{2} + 2\sec^{-1}(z) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1368.01

$$\tan^{-1}\left(\frac{z^2-2}{2\sqrt{z^2-1}}\right) = \frac{\pi z}{2\sqrt{z^2-1}}\sqrt{1-\frac{1}{z^2}}\left(\sqrt{\frac{1}{z^2}}\, z - \sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}} + \sqrt{\frac{i}{z}}\sqrt{-i z} - \sqrt{-\frac{i}{z}}\sqrt{i z} + \sqrt{1+\frac{1}{z}}\sqrt{\frac{z}{z+1}} - 2\right) + \frac{2z}{\sqrt{z^2-1}}\sqrt{1-\frac{1}{z^2}}\sec^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{2z\sqrt{1-z^2}}{1-2z^2}\right)$

Involving $\tan^{-1}\left(\frac{2z\sqrt{1-z^2}}{1-2z^2}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1369.01

$$\tan^{-1}\left(\frac{2z\sqrt{1-z^2}}{1-2z^2}\right) = \pi - 2\sec^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{4} \leq |\arg(z)| < \frac{3\pi}{4}$$

01.14.27.1370.01

$$\tan^{-1}\left(\frac{2z\sqrt{1-z^2}}{1-2z^2}\right) = -2\sec^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2}\left(\frac{\sqrt{z^2-1}\, z}{\sqrt{z^4-z^2}} + \sqrt{\frac{1}{z}}\sqrt{\frac{1}{\sqrt{2}\, z-1}}\sqrt{\sqrt{2}\, z-1}\sqrt{z} - \sqrt{-\frac{1}{z}}\sqrt{-z}\sqrt{-\sqrt{2}\, z-1}\sqrt{-\frac{1}{\sqrt{2}\, z+1}} + \frac{\sqrt{z^2}}{z} - 2\right)$$

Involving $\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right)$ and $\sec^{-1}\left(\frac{1}{z}\right)$

01.14.27.1371.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = -\frac{\pi}{2} + 2\sec^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} \leq \arg(z) < 0 \bigvee 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1372.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = -\frac{3\pi}{2} + 2\sec^{-1}\left(\frac{1}{z}\right) /; \frac{\pi}{2} \leq \arg(z) < 0 \bigvee -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1373.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = \frac{\pi}{2} + 2\sec^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1374.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = -\frac{5\pi}{2} + 2\sec^{-1}\left(\frac{1}{z}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1375.01

$$\tan^{-1}\left(\frac{1-2z^2}{2z\sqrt{1-z^2}}\right) = \frac{\pi}{2}\left(-\sqrt{\frac{1}{1-z}}\sqrt{1-z} + \sqrt{\frac{1}{z+1}}\sqrt{z+1} - \sqrt{-i z}\sqrt{\frac{i}{z}} + \sqrt{-\frac{i}{z}}\sqrt{i z} + \frac{\sqrt{z^2}}{z} - 2\right) + 2\sec^{-1}\left(\frac{1}{z}\right)$$

Involving $\sinh^{-1}$

Involving $\tan^{-1}(z)$

Involving $\tan^{-1}(z)$ and $\sinh^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right)$

01.14.27.1376.01

$$\tan^{-1}(z) = i\sinh^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right) + \frac{\pi}{2} /; 0 < \arg(z) < \frac{\pi}{2} \bigvee (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.1377.01

$$\tan^{-1}(z) = \frac{\pi}{2} - i\sinh^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right) /; -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.1378.01

$$\tan^{-1}(z) = i \sinh^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right) - \frac{\pi}{2} \;/;\; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.1379.01

$$\tan^{-1}(z) = -i \sinh^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right) - \frac{\pi}{2} \;/;\; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.1380.01

$$\tan^{-1}(z) = \frac{\pi \sqrt{z^2}}{2 z} - \frac{\sqrt{-z^2-1}}{z} \sqrt{\frac{z^2}{z^2+1}} \sinh^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sinh^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right)$

01.14.27.1381.01

$$\tan^{-1}(z) = i \sinh^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) + \frac{\pi}{2} \;/;\; 0 \leq \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1382.01

$$\tan^{-1}(z) = -i \sinh^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) + \frac{\pi}{2} \;/;\; -\frac{\pi}{2} < \arg(z) < 0$$

01.14.27.1383.01

$$\tan^{-1}(z) = i \sinh^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) - \frac{\pi}{2} \;/;\; \frac{\pi}{2} < \arg(z) < \pi$$

01.14.27.1384.01

$$\tan^{-1}(z) = -i \sinh^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) - \frac{\pi}{2} \;/;\; -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.1385.01

$$\tan^{-1}(z) = z \sqrt{-\frac{1}{z^2}} \sinh^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) + \frac{\pi \sqrt{z^2}}{2 z}$$

Involving $\tan^{-1}(z)$ and $\sinh^{-1}\left(\frac{z}{\sqrt{-1-z^2}}\right)$

01.14.27.1386.01

$$\tan^{-1}(z) = i \sinh^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right) \;/;\; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i z \in \mathbb{R} \land -1 < i z < 1)$$

01.14.27.1387.01

$$\tan^{-1}(z) = -i \sinh^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right) /; 0 < \arg(z) < \frac{\pi}{2} \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1388.01

$$\tan^{-1}(z) = i \sinh^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right) - \pi /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.1389.01

$$\tan^{-1}(z) = i \sinh^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right) + \pi /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.1390.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i z} \sqrt{\frac{1}{1-i z}} - \sqrt{i z+1} \sqrt{\frac{1}{i z+1}}\right) + \sqrt{-z^2-1} \sqrt{\frac{1}{z^2+1}} \sinh^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sinh^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{1+z^2}}\right)$

01.14.27.1391.01

$$\tan^{-1}(z) = i \sinh^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2+1}}\right) /; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) \leq \pi \bigvee (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.1392.01

$$\tan^{-1}(z) = -i \sinh^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2+1}}\right) /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.1393.01

$$\tan^{-1}(z) = i \sinh^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{1+z^2}}\right) - \pi /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.1394.01

$$\tan^{-1}(z) = -i \sinh^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{1+z^2}}\right) + \pi /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.1395.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i z} \sqrt{\frac{1}{1-i z}} - \sqrt{i z+1} \sqrt{\frac{1}{i z+1}}\right) + \frac{\sqrt{z^2}\,(z^2+1)}{z \sqrt{-z^2}} \sqrt{\frac{z^2}{(z^2+1)^2}} \sinh^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sinh^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-1-z^2}}\right)$

01.14.27.1396.01

$$\tan^{-1}(z) = -i \sinh^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-z^2-1}}\right) /; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) \leq \pi \bigvee (i z \in \mathbb{R} \wedge 0 < i z < 1)$$

01.14.27.1397.01

$$\tan^{-1}(z) = i \sinh^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-z^2-1}}\right) /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i z \in \mathbb{R} \wedge -1 < i z < 0)$$

01.14.27.1398.01

$$\tan^{-1}(z) = -i \sinh^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-z^2-1}}\right) - \pi /; (i z \in \mathbb{R} \wedge i z > 1)$$

01.14.27.1399.01

$$\tan^{-1}(z) = i \sinh^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-z^2-1}}\right) + \pi /; (i z \in \mathbb{R} \wedge i z < -1)$$

01.14.27.1400.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i z} \sqrt{\frac{1}{1-i z}} - \sqrt{i z+1} \sqrt{\frac{1}{i z+1}}\right) + \frac{\sqrt{-\left(z^2+1\right)^2}}{z} \sqrt{\frac{z^2}{\left(z^2+1\right)^2}} \sinh^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-z^2-1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sinh^{-1}\left(\sqrt{-\frac{z^2}{z^2+1}}\right)$

01.14.27.1401.01

$$\tan^{-1}(z) = i \sinh^{-1}\left(\sqrt{-\frac{z^2}{z^2+1}}\right) /; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) \leq \pi \bigvee (i z \in \mathbb{R} \wedge -1 < i z < 0)$$

01.14.27.1402.01

$$\tan^{-1}(z) = -i \sinh^{-1}\left(\sqrt{-\frac{z^2}{z^2+1}}\right) /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i z \in \mathbb{R} \wedge 0 < i z < 1)$$

01.14.27.1403.01

$$\tan^{-1}(z) = i \sinh^{-1}\left(\sqrt{-\frac{z^2}{z^2+1}}\right) + \pi /; (i z \in \mathbb{R} \wedge i z < -1)$$

01.14.27.1404.01

$$\tan^{-1}(z) = -i \sinh^{-1}\left(\sqrt{-\frac{z^2}{z^2+1}}\right) - \pi /; (i z \in \mathbb{R} \wedge i z > 1)$$

01.14.27.1405.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-iz}\,\sqrt{\frac{1}{1-iz}} - \sqrt{iz+1}\,\sqrt{\frac{1}{iz+1}}\right) - \frac{\sqrt{-z^2}}{z}\sinh^{-1}\left(\sqrt{-\frac{z^2}{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sinh^{-1}\left(\sqrt{1-\sqrt{1+z^2}}\,\big/\left(\sqrt{2}\,(1+z^2)^{1/4}\right)\right)$

01.14.27.1406.01

$$\tan^{-1}(z) = 2\,i\sinh^{-1}\left(\frac{\sqrt{1-\sqrt{z^2+1}}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) /;\ 0 < \arg(z) \leq \pi$$

01.14.27.1407.01

$$\tan^{-1}(z) = -2\,i\sinh^{-1}\left(\frac{\sqrt{1-\sqrt{z^2+1}}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) /;\ -\pi < \arg(z) \leq 0$$

01.14.27.1408.01

$$\tan^{-1}(z) = -\frac{2\sqrt{-z^2}}{z}\sinh^{-1}\left(\frac{\sqrt{1-\sqrt{z^2+1}}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sinh^{-1}\left(\sqrt{\left(1-\sqrt{1+z^2}\right)\big/\left(2\sqrt{1+z^2}\right)}\right)$

01.14.27.1409.01

$$\tan^{-1}(z) = 2\,i\sinh^{-1}\left(\sqrt{\frac{1-\sqrt{z^2+1}}{2\sqrt{z^2+1}}}\right) /;\ 0 < \arg(z) \leq \pi$$

01.14.27.1410.01

$$\tan^{-1}(z) = -2\,i\sinh^{-1}\left(\sqrt{\frac{1-\sqrt{z^2+1}}{2\sqrt{z^2+1}}}\right) /;\ -\pi < \arg(z) \leq 0$$

01.14.27.1411.01

$$\tan^{-1}(z) = -\frac{2\sqrt{-z^2}}{z}\sinh^{-1}\left(\sqrt{\frac{1-\sqrt{z^2+1}}{2\sqrt{z^2+1}}}\right)$$

Involving $\tan^{-1}(z)$ and $\sinh^{-1}\left(\sqrt{z-\sqrt{1+z^2}} \Big/ \left(\sqrt{2}\,(1+z^2)^{1/4}\right)\right)$

01.14.27.1412.01

$$\tan^{-1}(z) = 2\,i\,\sinh^{-1}\left(\frac{\sqrt{z-\sqrt{z^2+1}}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right)+\frac{\pi}{2} \;/;\; \operatorname{Im}(z)\geq 0$$

01.14.27.1413.01

$$\tan^{-1}(z) = \frac{\pi}{2}-2\,i\,\sinh^{-1}\left(\frac{\sqrt{z-\sqrt{z^2+1}}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) \;/;\; -\pi<\arg(z)<-\frac{\pi}{2}\bigvee -\frac{\pi}{2}<\arg(z)<0\bigvee (i\,z\in\mathbb{R}\land 0<i\,z<1)$$

01.14.27.1414.01

$$\tan^{-1}(z) = -\frac{3\,\pi}{2}+2\,i\,\sinh^{-1}\left(\frac{\sqrt{z-\sqrt{1+z^2}}}{\sqrt{2}\,(1+z^2)^{1/4}}\right) \;/;\; (i\,z\in\mathbb{R}\land i\,z>1)$$

01.14.27.1415.01

$$\tan^{-1}(z) = \pi\left(\sqrt{\frac{1}{1-i\,z}}\,\sqrt{1-i\,z}-\frac{1}{2}\right)+2\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\sqrt{\frac{1}{1-i\,z}}\,\sqrt{1-i\,z}\,\sinh^{-1}\left(\frac{\sqrt{z-\sqrt{z^2+1}}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\sinh^{-1}\left(\sqrt{\left(z-\sqrt{1+z^2}\right)\Big/\left(2\sqrt{1+z^2}\right)}\right)$

01.14.27.1416.01

$$\tan^{-1}(z) = 2\,i\,\sinh^{-1}\left(\sqrt{\frac{z-\sqrt{z^2+1}}{2\sqrt{z^2+1}}}\right)+\frac{\pi}{2} \;/;\; \operatorname{Im}(z)\geq 0$$

01.14.27.1417.01

$$\tan^{-1}(z) = \frac{\pi}{2}-2\,i\,\sinh^{-1}\left(\sqrt{\frac{z-\sqrt{z^2+1}}{2\sqrt{z^2+1}}}\right) \;/;\; -\pi<\arg(z)<-\frac{\pi}{2}\bigvee -\frac{\pi}{2}<\arg(z)<0\bigvee (i\,z\in\mathbb{R}\land 0<i\,z<1)$$

01.14.27.1418.01

$$\tan^{-1}(z) = -2\,i\,\sinh^{-1}\left(\sqrt{\frac{z-\sqrt{z^2+1}}{2\sqrt{z^2+1}}}\right)-\frac{3\,\pi}{2} \;/;\; (i\,z\in\mathbb{R}\land i\,z>1)$$

01.14.27.1419.01

$$\tan^{-1}(z) = \pi\left(\sqrt{1-i z}\sqrt{\frac{1}{1-i z}}-\frac{1}{2}\right)+2\sqrt{-\frac{1}{z}}\sqrt{z}\sinh^{-1}\left(\sqrt{\frac{z-\sqrt{z^2+1}}{2\sqrt{z^2+1}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sinh^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right)$

01.14.27.1420.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{1}{2} i \sinh^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) /; |z| < 1 \bigwedge 0 < \arg(z) \leq \pi$$

01.14.27.1421.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\frac{1}{2} i \sinh^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) /; |z| < 1 \bigwedge -\pi < \arg(z) \leq 0$$

01.14.27.1422.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\sqrt{z}}{2\sqrt{-z}} \sinh^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) /; |z| < 1$$

01.14.27.1423.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}-\frac{1}{2} i \sinh^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) /; |z| > 1 \bigwedge 0 < \arg(z) \leq \pi$$

01.14.27.1424.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{1}{2} i \sinh^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right)+\frac{\pi}{2} /; |z| > 1 \bigwedge -\pi < \arg(z) \leq 0$$

01.14.27.1425.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}-\frac{\sqrt{z}}{2\sqrt{-z}} \sinh^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) /; |z| > 1$$

01.14.27.1426.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{1}{4}\left(1-\frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\right)\pi-\frac{\sqrt{-z}\,(1-z)}{2\sqrt{z}\,(1+z)}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\sinh^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sinh^{-1}\left(\frac{1}{\sqrt{-z-1}}\right)$

01.14.27.1427.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}+i \sinh^{-1}\left(\frac{1}{\sqrt{-z-1}}\right) /; \operatorname{Im}(z) > 0 \vee (z \in \mathbb{R} \wedge z < -1)$$

01.14.27.1428.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - i \sinh^{-1}\left(\frac{1}{\sqrt{-z-1}}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > -1)$$

01.14.27.1429.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - \frac{\sqrt{-z-1}}{\sqrt{z+1}} \sinh^{-1}\left(\frac{1}{\sqrt{-z-1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sinh^{-1}\left(\sqrt{-\frac{1}{z+1}}\right)$

01.14.27.1430.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - i \sinh^{-1}\left(\sqrt{-\frac{1}{z+1}}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.1431.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} + i \sinh^{-1}\left(\sqrt{-\frac{1}{z+1}}\right) /; \operatorname{Im}(z) \geq 0$$

01.14.27.1432.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} + \sqrt{z} \sqrt{-\frac{1}{z}} \sinh^{-1}\left(\sqrt{-\frac{1}{z+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sinh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{1+z}}\right)$

01.14.27.1433.01

$$\tan^{-1}\left(\sqrt{z}\right) = -i \sinh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z+1}}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.1434.01

$$\tan^{-1}\left(\sqrt{z}\right) = i \sinh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z+1}}\right) /; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1435.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi - i \sinh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z+1}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1436.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}\left(1 - \sqrt{z+1} \sqrt{\frac{1}{z+1}}\right) + \frac{\sqrt{z} \sqrt{z+1}}{\sqrt{-z}} \sqrt{\frac{1}{z+1}} \sinh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sinh^{-1}\left(\frac{\sqrt{z}}{\sqrt{-1-z}}\right)$

01.14.27.1437.01

$$\tan^{-1}\left(\sqrt{z}\right) = -i \sinh^{-1}\left(\frac{\sqrt{z}}{\sqrt{-z-1}}\right) /; \operatorname{Im}(z) > 0$$

01.14.27.1438.01

$$\tan^{-1}\left(\sqrt{z}\right) = i \sinh^{-1}\left(\frac{\sqrt{z}}{\sqrt{-z-1}}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > -1)$$

01.14.27.1439.01

$$\tan^{-1}\left(\sqrt{z}\right) = i \sinh^{-1}\left(\frac{\sqrt{z}}{\sqrt{-z-1}}\right) + \pi /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1440.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}\left(1 - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right) + \sqrt{-z-1}\,\sqrt{\frac{1}{z+1}}\,\sinh^{-1}\left(\frac{\sqrt{z}}{\sqrt{-z-1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sinh^{-1}\left(\sqrt{-\frac{z}{z+1}}\right)$

01.14.27.1441.01

$$\tan^{-1}\left(\sqrt{z}\right) = i \sinh^{-1}\left(\sqrt{-\frac{z}{z+1}}\right) /; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1442.01

$$\tan^{-1}\left(\sqrt{z}\right) = -i \sinh^{-1}\left(\sqrt{-\frac{z}{z+1}}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 0)$$

01.14.27.1443.01

$$\tan^{-1}\left(\sqrt{z}\right) = i \sinh^{-1}\left(\sqrt{-\frac{z}{z+1}}\right) + \pi /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1444.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}\left(1 - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right) - \frac{\sqrt{-z^2}}{z}\,\sinh^{-1}\left(\sqrt{-\frac{z}{z+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sinh^{-1}\left(\sqrt{1-\sqrt{1+z}} \Big/ \left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.1445.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\, i \sinh^{-1}\left(\frac{\sqrt{1-\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /; 0 < \arg(z) \leq \pi$$

01.14.27.1446.01

$$\tan^{-1}\left(\sqrt{z}\right) = -2\, i \sinh^{-1}\left(\frac{\sqrt{1-\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.1447.01

$$\tan^{-1}\left(\sqrt{z}\right) == -\frac{2\sqrt{-z^2}}{z}\sinh^{-1}\left(\frac{\sqrt{1-\sqrt{z+1}}}{\sqrt{2}\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sinh^{-1}\left(\sqrt{\left(1-\sqrt{1+z}\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.1448.01

$$\tan^{-1}\left(\sqrt{z}\right) == 2\,i\sinh^{-1}\left(\sqrt{\frac{1-\sqrt{z+1}}{2\sqrt{z+1}}}\right)\; /;\; 0 < \arg(z) \leq \pi$$

01.14.27.1449.01

$$\tan^{-1}\left(\sqrt{z}\right) == -2\,i\sinh^{-1}\left(\sqrt{\frac{1-\sqrt{z+1}}{2\sqrt{z+1}}}\right)\; /;\; -\pi < \arg(z) \leq 0$$

01.14.27.1450.01

$$\tan^{-1}\left(\sqrt{z}\right) == -\frac{2\sqrt{-z^2}}{z}\sinh^{-1}\left(\sqrt{\frac{1-\sqrt{z+1}}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sinh^{-1}\left(\sqrt{\sqrt{z}-\sqrt{1+z}}\Big/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.1451.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{\pi}{2} + 2\,i\sinh^{-1}\left(\frac{\sqrt{\sqrt{z}-\sqrt{z+1}}}{\sqrt{2}\sqrt[4]{z+1}}\right)\; /;\; \operatorname{Im}(z) \geq 0$$

01.14.27.1452.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{\pi}{2} - 2\,i\sinh^{-1}\left(\frac{\sqrt{\sqrt{z}-\sqrt{z+1}}}{\sqrt{2}\sqrt[4]{z+1}}\right)\; /;\; \operatorname{Im}(z) < 0$$

01.14.27.1453.01

$$\tan^{-1}\left(\sqrt{z}\right) == 2\sqrt{-\frac{1}{z}}\sqrt{z}\sinh^{-1}\left(\frac{\sqrt{\sqrt{z}-\sqrt{z+1}}}{\sqrt{2}\sqrt[4]{z+1}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\sinh^{-1}\left(\sqrt{\left(\sqrt{z}-\sqrt{1+z}\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.1454.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{\pi}{2} + 2\,i\sinh^{-1}\left(\sqrt{\frac{\sqrt{z}-\sqrt{z+1}}{2\sqrt{z+1}}}\right)\; /;\; \operatorname{Im}(z) \geq 0$$

01.14.27.1455.01

$$\tan^{-1}\left(\sqrt{z}\right) == \frac{\pi}{2} - 2\,i\sinh^{-1}\left(\sqrt{\frac{\sqrt{z}-\sqrt{z+1}}{2\sqrt{z+1}}}\right) /;\ \operatorname{Im}(z) < 0$$

01.14.27.1456.01

$$\tan^{-1}\left(\sqrt{z}\right) == 2\sqrt{-\frac{1}{z}}\sqrt{z}\sinh^{-1}\left(\sqrt{\frac{\sqrt{z}-\sqrt{z+1}}{2\sqrt{z+1}}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sinh^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right)$

01.14.27.1457.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2} - \frac{1}{2}\,i\sinh^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) /;\ |z| < 1 \land \operatorname{Im}(z) > 0$$

01.14.27.1458.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{1}{2}\,i\sinh^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) + \frac{\pi}{2} /;\ |z| < 1 \bigwedge -\pi < \arg(z) \leq 0$$

01.14.27.1459.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -\frac{i}{2}\sinh^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) - \frac{\pi}{2} /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1460.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\sqrt{-z}}{2\sqrt{z}}\sinh^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) + \frac{1}{2}\pi\sqrt{\frac{1}{z}}\sqrt{z} /;\ |z| < 1$$

01.14.27.1461.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -\frac{\sqrt{-z}}{2\sqrt{z}}\sinh^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) /;\ |z| > 1$$

01.14.27.1462.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{4}\left(-\frac{z-1}{z+1}\sqrt{\left(\frac{z+1}{z-1}\right)^2} + 2\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 1\right) + \frac{\sqrt{-z}\,(1-z)}{2\sqrt{z}\,(z+1)}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\sinh^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) /;\ |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sinh^{-1}\left(\frac{1}{\sqrt{-1-z}}\right)$

01.14.27.1463.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -i\sinh^{-1}\left(\frac{1}{\sqrt{-z-1}}\right) /;\ 0 < \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.1464.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == i \sinh^{-1}\left(\frac{1}{\sqrt{-z-1}}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.1465.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == i \sinh^{-1}\left(\frac{1}{\sqrt{-z-1}}\right) - \pi /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1466.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2}\left(\sqrt{\frac{z}{z+1}} \sqrt{\frac{z+1}{z}} - 1\right) + \frac{\sqrt{-z-1}}{\sqrt{z+1}} \sinh^{-1}\left(\frac{1}{\sqrt{-z-1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sinh^{-1}\left(\sqrt{-\frac{1}{1+z}}\right)$

01.14.27.1467.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -i \sinh^{-1}\left(\sqrt{-\frac{1}{z+1}}\right) /; 0 \leq \arg(z) < \pi \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.1468.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == i \sinh^{-1}\left(\sqrt{-\frac{1}{z+1}}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.1469.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -i \sinh^{-1}\left(\sqrt{-\frac{1}{z+1}}\right) - \pi /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1470.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -\frac{1}{2}\pi\left(1 - \sqrt{\frac{z+1}{z}} \sqrt{\frac{z}{z+1}}\right) - \sqrt{-\frac{1}{z+1}} \sqrt{z+1} \sinh^{-1}\left(\sqrt{-\frac{1}{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sinh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z+1}}\right)$

01.14.27.1471.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2} - i \sinh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z+1}}\right) /; \operatorname{Im}(z) > 0$$

01.14.27.1472.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2} + i \sinh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z+1}}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 0)$$

01.14.27.1473.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -i \sinh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z+1}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1474.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i \sinh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z+1}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1475.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} \sqrt{z} \sqrt{\frac{1}{z}} + \frac{\sqrt{-\frac{z}{1+z}}}{\sqrt{\frac{z}{1+z}}} \sinh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sinh^{-1}\left(\frac{\sqrt{z}}{\sqrt{-z-1}}\right)$

01.14.27.1476.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} + i \sinh^{-1}\left(\frac{\sqrt{z}}{\sqrt{-z-1}}\right) \;/;\; 0 < \arg(z) < \pi$$

01.14.27.1477.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - i \sinh^{-1}\left(\frac{\sqrt{z}}{\sqrt{-z-1}}\right) \;/;\; -\pi < \arg(z) \leq 0$$

01.14.27.1478.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i \sinh^{-1}\left(\frac{\sqrt{z}}{\sqrt{-z-1}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1479.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2} \sqrt{z} \sqrt{\frac{1}{z}} \pi - \sqrt{-z-1} \sqrt{\frac{1}{z+1}} \sinh^{-1}\left(\frac{\sqrt{z}}{\sqrt{-z-1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sinh^{-1}\left(\sqrt{-\frac{z}{z+1}}\right)$

01.14.27.1480.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - i \sinh^{-1}\left(\sqrt{-\frac{z}{z+1}}\right) \;/;\; \operatorname{Im}(z) > 0$$

01.14.27.1481.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i \sinh^{-1}\left(\sqrt{-\frac{z}{z+1}}\right) + \frac{\pi}{2} \;/;\; -\pi < \arg(z) \leq 0$$

01.14.27.1482.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i \sinh^{-1}\left(\sqrt{-\frac{z}{z+1}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1483.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \sqrt{-z-1} \sqrt{\frac{1}{z}} \sqrt{z} \sqrt{\frac{1}{z+1}} \sinh^{-1}\left(\sqrt{-\frac{z}{z+1}}\right) + \frac{1}{2} \pi \sqrt{\frac{1}{z}} \sqrt{z}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sinh^{-1}\left(\sqrt{1-\sqrt{1+z}} \Big/ \left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.1484.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - 2\,i\sinh^{-1}\left(\frac{\sqrt{1-\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /;\ \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.1485.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} + 2\,i\sinh^{-1}\left(\frac{\sqrt{1-\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /;\ \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 0)$$

01.14.27.1486.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\sinh^{-1}\left(\frac{\sqrt{1-\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) - \frac{\pi}{2} /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1487.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{2\sqrt{-z}}{\sqrt{z}}\sinh^{-1}\left(\frac{\sqrt{1-\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) + \frac{1}{2}\pi\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sinh^{-1}\left(\sqrt{\left(1-\sqrt{1+z}\right)\Big/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.1488.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - 2\,i\sinh^{-1}\left(\sqrt{\frac{1-\sqrt{z+1}}{2\sqrt{z+1}}}\right) /;\ \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.1489.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\sinh^{-1}\left(\sqrt{\frac{1-\sqrt{z+1}}{2\sqrt{z+1}}}\right) + \frac{\pi}{2} /;\ \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 0)$$

01.14.27.1490.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\sinh^{-1}\left(\sqrt{\frac{1-\sqrt{z+1}}{2\sqrt{z+1}}}\right) - \frac{\pi}{2} /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1491.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{2\sqrt{-z}}{\sqrt{z}}\sinh^{-1}\left(\sqrt{\frac{1-\sqrt{z+1}}{2\sqrt{z+1}}}\right) + \frac{1}{2}\pi\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sinh^{-1}\left(\sqrt{\sqrt{z}-\sqrt{1+z}} \Big/ \left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.1492.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\sinh^{-1}\left(\frac{\sqrt{\sqrt{z}-\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /;\ 0 \le \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.1493.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\,\sinh^{-1}\left(\frac{\sqrt{\sqrt{z}-\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /;\ \operatorname{Im}(z) < 0$$

01.14.27.1494.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\sinh^{-1}\left(\frac{\sqrt{\sqrt{z}-\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) - \pi /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1495.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{1}{2}\pi\left(1 - \sqrt{\frac{z+1}{z}}\,\sqrt{\frac{z}{z+1}}\right) - 2\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\sinh^{-1}\left(\frac{\sqrt{\sqrt{z}-\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\sinh^{-1}\left(\sqrt{\left(\sqrt{z}-\sqrt{1+z}\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.1496.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\sinh^{-1}\left(\sqrt{\frac{\sqrt{z}-\sqrt{z+1}}{2\sqrt{z+1}}}\right) /;\ 0 \le \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.1497.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\,\sinh^{-1}\left(\sqrt{\frac{\sqrt{z}-\sqrt{z+1}}{2\sqrt{z+1}}}\right) /;\ \operatorname{Im}(z) < 0$$

01.14.27.1498.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\sinh^{-1}\left(\sqrt{\frac{\sqrt{z}-\sqrt{z+1}}{2\sqrt{z+1}}}\right) - \pi /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1499.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\left(\sqrt{\frac{z+1}{z}}\,\sqrt{\frac{z}{z+1}} - 1\right)\pi - 2\sqrt{z}\,\sqrt{-\frac{1}{z}}\,\sinh^{-1}\left(\sqrt{\frac{\sqrt{z}-\sqrt{z+1}}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$ and $\sinh^{-1}\left(\frac{1}{\sqrt{-z}}\right)$

01.14.27.1500.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = i \sinh^{-1}\left(\frac{1}{\sqrt{-z}}\right) + \frac{\pi}{2} \;/;\; 0 < \arg(z) \leq \pi$$

01.14.27.1501.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = -i \sinh^{-1}\left(\frac{1}{\sqrt{-z}}\right) + \frac{\pi}{2} \;/;\; -\pi < \arg(z) \leq 0$$

01.14.27.1502.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = \frac{\sqrt{z}}{\sqrt{-z}} \sinh^{-1}\left(\frac{1}{\sqrt{-z}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$ and $\sinh^{-1}\left(\sqrt{-\frac{1}{z}}\right)$

01.14.27.1503.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = i \sinh^{-1}\left(\sqrt{-\frac{1}{z}}\right) + \frac{\pi}{2} \;/;\; \operatorname{Im}(z) \geq 0$$

01.14.27.1504.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = -i \sinh^{-1}\left(\sqrt{-\frac{1}{z}}\right) + \frac{\pi}{2} \;/;\; \operatorname{Im}(z) < 0$$

01.14.27.1505.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = \sqrt{z} \sqrt{-\frac{1}{z}} \sinh^{-1}\left(\sqrt{-\frac{1}{z}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$ and $\sinh^{-1}\left(\frac{1}{\sqrt{-z}}\right)$

01.14.27.1506.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = -i \sinh^{-1}\left(\frac{1}{\sqrt{-z}}\right) \;/;\; 0 < \arg(z) \leq \pi$$

01.14.27.1507.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = i \sinh^{-1}\left(\frac{1}{\sqrt{-z}}\right) \;/;\; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.1508.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = i \sinh^{-1}\left(\frac{1}{\sqrt{-z}}\right) - \pi \;/;\; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1509.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{\pi}{2}\left(\sqrt{z-1} \sqrt{\frac{1}{z-1}} - \sqrt{z} \sqrt{\frac{1}{z}}\right) - \frac{\sqrt{z}}{\sqrt{-z}} \sinh^{-1}\left(\frac{1}{\sqrt{-z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$ and $\sinh^{-1}\left(\sqrt{-\frac{1}{z}}\right)$

01.14.27.1510.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = -i\sinh^{-1}\left(\sqrt{-\frac{1}{z}}\right) /; 0 < \arg(z) \leq \pi \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1511.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = i\sinh^{-1}\left(\sqrt{-\frac{1}{z}}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.1512.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = -i\sinh^{-1}\left(\sqrt{-\frac{1}{z}}\right) - \pi /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1513.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{\pi}{2}\left(\sqrt{z-1}\sqrt{\frac{1}{z-1}} - \sqrt{z}\sqrt{\frac{1}{z}}\right) - \sqrt{z}\sqrt{-\frac{1}{z}}\sinh^{-1}\left(\sqrt{-\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$ and $\sinh^{-1}\left(\frac{1}{\sqrt{-z}}\right)$

01.14.27.1514.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = -i\sinh^{-1}\left(\frac{1}{\sqrt{-z}}\right) /; 0 < \arg(z) < \pi$$

01.14.27.1515.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = i\sinh^{-1}\left(\frac{1}{\sqrt{-z}}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z < 0) \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.1516.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = -i\sinh^{-1}\left(\frac{1}{\sqrt{-z}}\right) + \pi /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1517.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \sqrt{\frac{1}{z-1}}\sqrt{\frac{z-1}{z}}\sqrt{-z}\sinh^{-1}\left(\frac{1}{\sqrt{-z}}\right) - \frac{\pi}{2}\left(\sqrt{-z}\sqrt{-\frac{1}{z}}\sqrt{1-z}\sqrt{\frac{1}{1-z}} - 1\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$ and $\sinh^{-1}\left(\sqrt{-\frac{1}{z}}\right)$

01.14.27.1518.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = -i \sinh^{-1}\left(\sqrt{-\frac{1}{z}}\right) /; 0 < \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1519.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = i \sinh^{-1}\left(\sqrt{-\frac{1}{z}}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z < 0)$$

01.14.27.1520.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = i \sinh^{-1}\left(\sqrt{-\frac{1}{z}}\right) + \pi /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1521.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = -\sqrt{\frac{1}{-1+z}} \sqrt{-1+z} \sqrt{z} \sqrt{-\frac{1}{z}} \sinh^{-1}\left(\sqrt{-\frac{1}{z}}\right) - \frac{\pi}{2}\left(\sqrt{-z} \sqrt{-\frac{1}{z}} \sqrt{1-z} \sqrt{\frac{1}{1-z}} - 1\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$ and $\sinh^{-1}\left(\sqrt{-z}\right)$

01.14.27.1522.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \frac{\pi}{2} - i \sinh^{-1}\left(\sqrt{-z}\right) /; \operatorname{Im}(z) > 0$$

01.14.27.1523.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = i \sinh^{-1}\left(\sqrt{-z}\right) + \frac{\pi}{2} /; -\pi < \arg(z) \le 0$$

01.14.27.1524.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = -i \sinh^{-1}\left(\sqrt{-z}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1525.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \frac{\pi}{2} \sqrt{z} \sqrt{\frac{1}{z}} + \frac{\sqrt{-z}}{\sqrt{z}} \sinh^{-1}\left(\sqrt{-z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$ and $\sinh^{-1}\left(\sqrt{-z}\right)$

01.14.27.1526.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = i \sinh^{-1}\left(\sqrt{-z}\right) - \frac{\pi}{2} /; \operatorname{Im}(z) > 0$$

01.14.27.1527.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = -i \sinh^{-1}\left(\sqrt{-z}\right) - \frac{\pi}{2} \;/;\; \mathrm{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.1528.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \frac{\pi}{2} + i \sinh^{-1}\left(\sqrt{-z}\right) \;/;\; (z \in \mathbb{R} \land z < 1)$$

01.14.27.1529.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \frac{\sqrt{z-1}}{\sqrt{1-z}} \sinh^{-1}\left(\sqrt{-z}\right) - \frac{\pi \sqrt{-z} \sqrt{z-1}}{2 \sqrt{1-z}} \sqrt{\frac{1}{z}}$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$ and $\sinh^{-1}\left(\sqrt{-z}\right)$

01.14.27.1530.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \frac{\pi}{2} + i \sinh^{-1}\left(\sqrt{-z}\right) \;/;\; \mathrm{Im}(z) \le 0$$

01.14.27.1531.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \frac{\pi}{2} - i \sinh^{-1}\left(\sqrt{-z}\right) \;/;\; \mathrm{Im}(z) > 0$$

01.14.27.1532.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \sqrt{\frac{1}{z}} \sqrt{-z} \sinh^{-1}\left(\sqrt{-z}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$ and $\sinh^{-1}\left(\sqrt{-z}\right)$

01.14.27.1533.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = i \sinh^{-1}\left(\sqrt{-z}\right) \;/;\; 0 < \arg(z) \le \pi$$

01.14.27.1534.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = -i \sinh^{-1}\left(\sqrt{-z}\right) \;/;\; \mathrm{Im}(z) < 0 \lor (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1535.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = -i \sinh^{-1}\left(\sqrt{-z}\right) - \pi \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1536.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{1}{2}\pi\left(\sqrt{1-z}\sqrt{\frac{1}{1-z}} - 1\right) - \frac{\sqrt{-z}}{\sqrt{z}} \sinh^{-1}\left(\sqrt{-z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$ and $\sinh^{-1}\left(\sqrt{-z}\right)$

01.14.27.1537.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = -i \sinh^{-1}\left(\sqrt{-z}\right) \;/;\; 0 < \arg(z) \leq \pi \lor (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1538.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = i \sinh^{-1}\left(\sqrt{-z}\right) \;/;\; \operatorname{Im}(z) < 0$$

01.14.27.1539.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \pi + i \sinh^{-1}\left(\sqrt{-z}\right) \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1540.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\pi}{2}\left(1 - \sqrt{1-z}\sqrt{\frac{1}{1-z}}\right) + \frac{\sqrt{1-z}}{\sqrt{z-1}} \sinh^{-1}\left(\sqrt{-z}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$ and $\sinh^{-1}\left(\sqrt{-z}\right)$

01.14.27.1541.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = i \sinh^{-1}\left(\sqrt{-z}\right) \;/;\; 0 < \arg(z) \leq \pi$$

01.14.27.1542.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = -i \sinh^{-1}\left(\sqrt{-z}\right) \;/;\; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1543.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \pi + i \sinh^{-1}\left(\sqrt{-z}\right) \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1544.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) == \frac{\pi}{2}\left(1-\sqrt{1-z}\sqrt{\frac{1}{1-z}}\right)+\frac{\sqrt{(1-z)\,z}}{\sqrt{-z}}\sqrt{\frac{1}{1-z}}\sinh^{-1}\left(\sqrt{-z}\right)$$

Involving $\tan^{-1}\left(\sqrt{-z^2-1}\right)$

Involving $\tan^{-1}\left(\sqrt{-z^2-1}\right)$ and $\sinh^{-1}\left(\frac{1}{z}\right)$

01.14.27.1545.01

$$\tan^{-1}\left(\sqrt{-z^2-1}\right) == i\sinh^{-1}\left(\frac{1}{z}\right)+\frac{\pi}{2}\;/;\; -\pi < \arg(z) \leq 0$$

01.14.27.1546.01

$$\tan^{-1}\left(\sqrt{-z^2-1}\right) == -i\sinh^{-1}\left(\frac{1}{z}\right)+\frac{\pi}{2}\;/;\; 0 < \arg(z) \leq \pi$$

01.14.27.1547.01

$$\tan^{-1}\left(\sqrt{-z^2-1}\right) == \frac{\pi}{2}+\frac{\sqrt{-z^2}}{z}\sinh^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right)$ and $\sinh^{-1}\left(\frac{1}{z}\right)$

01.14.27.1548.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right) == i\sinh^{-1}\left(\frac{1}{z}\right)\;/;\; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) \leq \pi \bigvee (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.1549.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right) == -i\sinh^{-1}\left(\frac{1}{z}\right)\;/;\; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.1550.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right) == i\sinh^{-1}\left(\frac{1}{z}\right)-\pi\;/;\; (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.1551.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right) == -i\sinh^{-1}\left(\frac{1}{z}\right)-\pi\;/;\; (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.1552.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right) = \frac{\pi i}{2}\left(\frac{\sqrt{-i z-1}}{\sqrt{i z+1}} + \frac{\sqrt{i z-1}}{\sqrt{1-i z}}\right) - \frac{\sqrt{-z^2}}{z}\sinh^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right)$

Involving $\tan^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right)$ and $\sinh^{-1}\left(\frac{1}{z}\right)$

01.14.27.1553.01

$$\tan^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) = i\sinh^{-1}\left(\frac{1}{z}\right) /; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) < \pi \bigvee (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.1554.01

$$\tan^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) = -i\sinh^{-1}\left(\frac{1}{z}\right) /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) < 0 \bigvee (i z \in \mathbb{R} \land i z > 1) \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.1555.01

$$\tan^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) = -i\sinh^{-1}\left(\frac{1}{z}\right) + \pi /; (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.1556.01

$$\tan^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) = i\sinh^{-1}\left(\frac{1}{z}\right) + \pi /; (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.1557.01

$$\tan^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) = \sqrt{\frac{1}{-z^2-1}}\sqrt{-z^2-1}\left(\frac{i\pi}{2}\left(\frac{\sqrt{i z-1}}{\sqrt{1-i z}} + \frac{\sqrt{-i z-1}}{\sqrt{i z+1}}\right) - \frac{\sqrt{-z^2}}{z}\sinh^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right)$ and $\sinh^{-1}(z)$

01.14.27.1558.01

$$\tan^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right) = i\sinh^{-1}(z) /; 0 < \arg(z) < \frac{\pi}{2} \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1559.01

$$\tan^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right) = -i \sinh^{-1}(z) /; \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i z \in \mathbb{R} \land -1 < i z < 1)$$

01.14.27.1560.01

$$\tan^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right) = i \sinh^{-1}(z) + \pi /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.1561.01

$$\tan^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right) = i \sinh^{-1}(z) - \pi /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.0030.02

$$\tan^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right) = \frac{\sqrt{-z^2-1}}{\sqrt{z^2+1}} \left(-\sinh^{-1}(z) + \frac{\pi i}{2} \left(\sqrt{\frac{1}{1-i z}} \sqrt{1-i z} - \sqrt{\frac{1}{i z+1}} \sqrt{i z+1}\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{1+z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{1+z^2}}\right)$ and $\sinh^{-1}(z)$

01.14.27.1562.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2+1}}\right) = i \sinh^{-1}(z) /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.1563.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2+1}}\right) = -i \sinh^{-1}(z) /; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) \leq \pi \bigvee (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.1564.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{1+z^2}}\right) = -i \sinh^{-1}(z) - \pi /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.1565.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{1+z^2}}\right) = i \sinh^{-1}(z) - \pi /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.1566.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{1+z^2}}\right) = \frac{z}{\sqrt{-z^2}} \left(\frac{\pi i}{2} \left(\sqrt{\frac{1}{1-i z}} \sqrt{1-i z} - \sqrt{\frac{1}{i z+1}} \sqrt{i z+1}\right) - \sinh^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-1-z^2}}\right)$ and $\sinh^{-1}(z)$

01.14.27.1567.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-1-z^2}}\right) = -i\sinh^{-1}(z) \;/;\; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.1568.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-1-z^2}}\right) = i\sinh^{-1}(z) \;/;\; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) \leq \pi \bigvee (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.1569.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-1-z^2}}\right) = i\sinh^{-1}(z) + \pi \;/;\; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.1570.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-1-z^2}}\right) = -i\sinh^{-1}(z) + \pi \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.1571.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-z^2-1}}\right) = \frac{\sqrt{-z^2-1}}{z}\sqrt{\frac{z^2}{z^2+1}}\left(\frac{\pi\,i}{2}\left(\sqrt{\frac{1}{1-i\,z}}\sqrt{1-i\,z} - \sqrt{\frac{1}{i\,z+1}}\sqrt{i\,z+1}\right) - \sinh^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\sqrt{-\frac{z^2}{1+z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{-\frac{z^2}{1+z^2}}\right)$ and $\sinh^{-1}(z)$

01.14.27.1572.01

$$\tan^{-1}\left(\sqrt{-\frac{z^2}{1+z^2}}\right) = i\sinh^{-1}(z) \;/;\; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.1573.01

$$\tan^{-1}\left(\sqrt{-\frac{z^2}{1+z^2}}\right) = -i\sinh^{-1}(z) \;/;\; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) \leq \pi \bigvee (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.1574.01

$$\tan^{-1}\left(\sqrt{-\frac{z^2}{1+z^2}}\right) = i\sinh^{-1}(z)+\pi\ /;\ (i\,z\in\mathbb{R}\land i\,z<-1)$$

01.14.27.1575.01

$$\tan^{-1}\left(\sqrt{-\frac{z^2}{1+z^2}}\right) = -i\sinh^{-1}(z)+\pi\ /;\ (i\,z\in\mathbb{R}\land i\,z>1)$$

01.14.27.1576.01

$$\tan^{-1}\left(\sqrt{-\frac{z^2}{1+z^2}}\right) = -\frac{\sqrt{z^2+1}}{z}\sqrt{-\frac{z^2}{z^2+1}}\left(\frac{\pi\,i}{2}\left(\sqrt{\frac{1}{1-i\,z}}\sqrt{1-i\,z}-\sqrt{\frac{1}{i\,z+1}}\sqrt{i\,z+1}\right)-\sinh^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right)$ and $\sinh^{-1}(z)$

01.14.27.1577.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right) = -i\sinh^{-1}(z)-\frac{\pi}{2}\ /;\ 0<\arg(z)<\frac{\pi}{2}\bigvee(i\,z\in\mathbb{R}\land i\,z<-1)$$

01.14.27.1578.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right) = i\sinh^{-1}(z)+\frac{\pi}{2}\ /;\ \frac{\pi}{2}<\arg(z)<\pi\bigvee(i\,z\in\mathbb{R}\land -1<i\,z<0)\bigvee(z\in\mathbb{R}\land z>0)$$

01.14.27.1579.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right) = \frac{\pi}{2}-i\sinh^{-1}(z)\ /;\ -\pi<\arg(z)<-\frac{\pi}{2}\bigvee(i\,z\in\mathbb{R}\land i\,z>1)$$

01.14.27.1580.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right) = i\sinh^{-1}(z)-\frac{\pi}{2}\ /;\ -\frac{\pi}{2}<\arg(z)<0\bigvee(z\in\mathbb{R}\land z<0)\bigvee(i\,z\in\mathbb{R}\land 0<i\,z<1)$$

01.14.27.0029.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right) = -\frac{\sqrt{-z^2-1}}{\sqrt{z^2+1}}\left(\frac{\pi}{2}\sqrt{-\frac{1}{z^2}}\,z-\sinh^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right)$ and $\sinh^{-1}(z)$

01.14.27.1581.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right) = i \sinh^{-1}(z) + \frac{\pi}{2} /; \operatorname{Im}(z) > 0$$

01.14.27.1582.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right) = -i \sinh^{-1}(z) + \frac{\pi}{2} /; \operatorname{Im}(z) < 0$$

01.14.27.1583.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right) = -i \sinh^{-1}(z) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z > 0)$$

01.14.27.1584.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right) = i \sinh^{-1}(z) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1585.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{-z^2}}\right) = \frac{z}{\sqrt{-z^2}} \sinh^{-1}(z) + \frac{1}{2} \pi \sqrt{-z^2} \sqrt{-\frac{1}{z^2}}$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{z^2}}\right)$ and $\sinh^{-1}(z)$

01.14.27.1586.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{z^2}}\right) = -i \sinh^{-1}(z) - \frac{\pi}{2} /; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) < \pi \bigvee (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.1587.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{z^2}}\right) = i \sinh^{-1}(z) - \frac{\pi}{2} /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) < 0 \bigvee (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.1588.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{z^2}}\right) = i \sinh^{-1}(z) + \frac{\pi}{2} /; (z \in \mathbb{R} \land z > 0) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.1589.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{z^2}}\right) == -i\sinh^{-1}(z)+\frac{\pi}{2} /; (z\in\mathbb{R}\land z<0)\lor(i\,z\in\mathbb{R}\land 0<i\,z<1)$$

01.14.27.1590.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{z^2}}\right) == \frac{\sqrt{z^2}}{\sqrt{-z^2-1}}\sqrt{-1-\frac{1}{z^2}}\left(\sqrt{-\frac{1}{z^2}}\,z\sinh^{-1}(z)+\frac{\pi}{2}\right)$$

Involving $\tan^{-1}\left(\sqrt{-\frac{1+z^2}{z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{-\frac{1+z^2}{z^2}}\right)$ and $\sinh^{-1}(z)$

01.14.27.1591.01

$$\tan^{-1}\left(\sqrt{-\frac{1+z^2}{z^2}}\right) == i\sinh^{-1}(z)+\frac{\pi}{2} /; 0\leq\arg(z)<\pi$$

01.14.27.1592.01

$$\tan^{-1}\left(\sqrt{-\frac{1+z^2}{z^2}}\right) == \frac{\pi}{2}-i\sinh^{-1}(z) /; -\pi<\arg(z)<0\bigvee(z\in\mathbb{R}\land z<0)$$

01.14.27.1593.01

$$\tan^{-1}\left(\sqrt{-\frac{z^2+1}{z^2}}\right) == \sqrt{-\frac{1}{z^2}}\,z\sinh^{-1}(z)+\frac{\pi}{2}$$

Involving $\cosh^{-1}$

Involving $\tan^{-1}(z)$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\frac{2z}{1+z^2}\right)$

01.14.27.1594.01

$$\tan^{-1}(z) == \frac{1}{2}\left(i\cosh^{-1}\left(\frac{2z}{z^2+1}\right)+\frac{\pi}{2}\right) /; |z|<1\land\operatorname{Im}(z)\geq 0\bigvee 0<\arg(z)\leq\frac{\pi}{2}$$

01.14.27.1595.01

$$\tan^{-1}(z) == \frac{1}{2}\left(\frac{\pi}{2}-i\cosh^{-1}\left(\frac{2z}{z^2+1}\right)\right) /; |z|<1\land\operatorname{Im}(z)<0\bigvee|z|>1\bigwedge-\frac{\pi}{2}<\arg(z)\leq 0$$

01.14.27.1596.01

$$\tan^{-1}(z) = \frac{1}{2}\left(\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\cosh^{-1}\left(\frac{2z}{z^2+1}\right)+\frac{\pi}{2}\right) /; |z|<1 \bigvee |z|>1 \bigwedge -\frac{\pi}{2}<\arg(z)<0 \bigvee |z|>1 \bigwedge 0<\arg(z)\leq\frac{\pi}{2}$$

01.14.27.1597.01

$$\tan^{-1}(z) = \frac{1}{2}\left(i\cosh^{-1}\left(\frac{2z}{z^2+1}\right)-\frac{3\pi}{2}\right) /; |z|>1 \bigwedge \frac{\pi}{2}<\arg(z)<\pi$$

01.14.27.1598.01

$$\tan^{-1}(z) = \frac{1}{2}\left(-i\cosh^{-1}\left(\frac{2z}{z^2+1}\right)-\frac{3\pi}{2}\right) /; |z|>1 \bigwedge \left(-\pi<\arg(z)\leq-\frac{\pi}{2} \bigvee (z\in\mathbb{R}\land z<0)\right)$$

01.14.27.1599.01

$$\tan^{-1}(z) = \frac{1}{2}\left(-\sqrt{\frac{1}{z}}\,\sqrt{-z}\,\cosh^{-1}\left(\frac{2z}{z^2+1}\right)-\frac{3\pi}{2}\right) /; |z|>1 \bigwedge \frac{\pi}{2}<\arg(z)\leq\pi \bigvee |z|>1 \bigwedge -\pi<\arg(z)\leq-\frac{\pi}{2}$$

01.14.27.1600.01

$$\tan^{-1}(z) = \frac{\pi}{4}\left(\frac{\sqrt{z^2}}{z}-\frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\left(\frac{\sqrt{z^2}}{z}-1\right)\right)+\frac{1}{2}\sqrt{-\frac{z+1}{z}}\,\sqrt{\frac{1}{1-z^2}}\,\sqrt{z-z^2}\,\cosh^{-1}\left(\frac{2z}{z^2+1}\right)$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\frac{1-z^2}{1+z^2}\right)$

01.14.27.1601.01

$$\tan^{-1}(z) = \frac{1}{2}i\cosh^{-1}\left(\frac{1-z^2}{z^2+1}\right) /; 0<\arg(z)<\frac{\pi}{2} \bigvee \frac{\pi}{2}<\arg(z)\leq\pi \bigvee (iz\in\mathbb{R}\land -1<iz<0)$$

01.14.27.1602.01

$$\tan^{-1}(z) = -\frac{i}{2}\cosh^{-1}\left(\frac{1-z^2}{z^2+1}\right) /; -\pi<\arg(z)<-\frac{\pi}{2} \bigvee -\frac{\pi}{2}<\arg(z)\leq 0 \bigvee (iz\in\mathbb{R}\land 0<iz<1)$$

01.14.27.1603.01

$$\tan^{-1}(z) = -\frac{1}{2}i\cosh^{-1}\left(\frac{1-z^2}{z^2+1}\right)-\pi /; (iz\in\mathbb{R}\land iz>1)$$

01.14.27.1604.01

$$\tan^{-1}(z) = \frac{1}{2}i\cosh^{-1}\left(\frac{1-z^2}{z^2+1}\right)+\pi /; (iz\in\mathbb{R}\land iz<-1)$$

01.14.27.1605.01

$$\tan^{-1}(z) = \frac{1}{2}\left(\sqrt{1-iz}\,\sqrt{\frac{1}{1-iz}}-\sqrt{iz+1}\,\sqrt{\frac{1}{iz+1}}\right)\pi-\frac{\sqrt{-z^2}}{2z}\cosh^{-1}\left(\frac{1-z^2}{1+z^2}\right)$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\frac{z^2-1}{z^2+1}\right)$

01.14.27.1606.01

$$\tan^{-1}(z) = \frac{1}{2}i\cosh^{-1}\left(\frac{z^2-1}{z^2+1}\right)+\frac{\pi}{2} /; 0\leq\arg(z)\leq\frac{\pi}{2}$$

01.14.27.1607.01

$$\tan^{-1}(z) = \frac{\pi}{2} - \frac{1}{2} i \cosh^{-1}\left(\frac{z^2-1}{z^2+1}\right) /; -\frac{\pi}{2} < \arg(z) < 0$$

01.14.27.1608.01

$$\tan^{-1}(z) = -\frac{\pi}{2} + \frac{1}{2} i \cosh^{-1}\left(\frac{z^2-1}{z^2+1}\right) /; \frac{\pi}{2} < \arg(z) < \pi$$

01.14.27.1609.01

$$\tan^{-1}(z) = -\frac{\pi}{2} - \frac{1}{2} i \cosh^{-1}\left(\frac{z^2-1}{z^2+1}\right) /; -\pi < \arg(z) \le -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \wedge z < 0)$$

01.14.27.1610.01

$$\tan^{-1}(z) = \frac{1}{2} z \sqrt{-\frac{1}{z^2}} \cosh^{-1}\left(\frac{z^2-1}{z^2+1}\right) + \frac{\pi\sqrt{z^2}}{2z}$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\frac{1}{\sqrt{z^2+1}}\right)$

01.14.27.1611.01

$$\tan^{-1}(z) = i \cosh^{-1}\left(\frac{1}{\sqrt{z^2+1}}\right) /; 0 < \arg(z) \le \pi$$

01.14.27.1612.01

$$\tan^{-1}(z) = -i \cosh^{-1}\left(\frac{1}{\sqrt{z^2+1}}\right) /; -\pi < \arg(z) \le 0$$

01.14.27.1613.01

$$\tan^{-1}(z) = -\frac{\sqrt{-z^2}}{z} \cosh^{-1}\left(\frac{1}{\sqrt{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right)$

01.14.27.1614.01

$$\tan^{-1}(z) = -i \cosh^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right) /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) \le 0 \bigvee (i z \in \mathbb{R} \wedge 0 < i z < 1)$$

01.14.27.1615.01

$$\tan^{-1}(z) = i \cosh^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right) /; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) \le \pi \bigvee (i z \in \mathbb{R} \wedge -1 < i z < 0)$$

01.14.27.1616.01

$$\tan^{-1}(z) = i\cosh^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right) + \pi \;/;\; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.1617.01

$$\tan^{-1}(z) = -i\cosh^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right) - \pi \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.1618.01

$$\tan^{-1}(z) = -\frac{1}{2}\pi\left(\sqrt{i\,z+1}\sqrt{\frac{1}{i\,z+1}} - \sqrt{1-i\,z}\sqrt{\frac{1}{1-i\,z}}\right) - \frac{\sqrt{-z^2}}{z}\cosh^{-1}\left(\sqrt{\frac{1}{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\frac{z}{\sqrt{1+z^2}}\right)$

01.14.27.1619.01

$$\tan^{-1}(z) = i\cosh^{-1}\left(\frac{z}{\sqrt{z^2+1}}\right) + \frac{\pi}{2} \;/;\; \operatorname{Im}(z) \geq 0$$

01.14.27.1620.01

$$\tan^{-1}(z) = \frac{\pi}{2} - i\cosh^{-1}\left(\frac{z}{\sqrt{z^2+1}}\right) \;/;\; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) < 0 \bigvee (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.1621.01

$$\tan^{-1}(z) = -\frac{3\pi}{2} - i\cosh^{-1}\left(\frac{z}{\sqrt{z^2+1}}\right) \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.1622.01

$$\tan^{-1}(z) = \pi\left(\sqrt{1-i\,z}\sqrt{\frac{1}{1-i\,z}} - \frac{1}{2}\right) + \sqrt{-\frac{1}{z}}\sqrt{z}\cosh^{-1}\left(\frac{z}{\sqrt{z^2+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1+z^2}}\right)$

01.14.27.1623.01

$$\tan^{-1}(z) = i\cosh^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{z^2+1}}\right) + \frac{\pi}{2} \;/;\; 0 \leq \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1624.01

$$\tan^{-1}(z) = \frac{\pi}{2} - i\cosh^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{z^2+1}}\right) \;/;\; -\frac{\pi}{2} < \arg(z) < 0$$

01.14.27.1625.01

$$\tan^{-1}(z) == i\cosh^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{z^2+1}}\right)-\frac{\pi}{2}\;/;\;\frac{\pi}{2}<\arg(z)<\pi$$

01.14.27.1626.01

$$\tan^{-1}(z) == -\frac{\pi}{2}-i\cosh^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{z^2+1}}\right)/;\;-\pi<\arg(z)\leq-\frac{\pi}{2}\bigvee(z\in\mathbb{R}\land z<0)$$

01.14.27.1627.01

$$\tan^{-1}(z) == \frac{\sqrt{z^2}}{z}\left(\sqrt{-\frac{1}{z^2+1}}\sqrt{z^2+1}\cosh^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1+z^2}}\right)+\frac{\pi}{2}\right)$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-1-z^2}}\right)$

01.14.27.1628.01

$$\tan^{-1}(z) == i\cosh^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-z^2-1}}\right)+\frac{\pi}{2}\;/;\;0\leq\arg(z)<\frac{\pi}{2}\bigvee(i z\in\mathbb{R}\land i z<-1)$$

01.14.27.1629.01

$$\tan^{-1}(z) == \frac{\pi}{2}-i\cosh^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-z^2-1}}\right)/;\;-\frac{\pi}{2}<\arg(z)<0\bigvee(i z\in\mathbb{R}\land 0<i z<1)$$

01.14.27.1630.01

$$\tan^{-1}(z) == i\cosh^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-z^2-1}}\right)-\frac{\pi}{2}\;/;\;\frac{\pi}{2}<\arg(z)<\pi\bigvee(i z\in\mathbb{R}\land -1<i z<0)$$

01.14.27.1631.01

$$\tan^{-1}(z) == -i\cosh^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-z^2-1}}\right)-\frac{\pi}{2}\;/;\;-\pi<\arg(z)<-\frac{\pi}{2}\bigvee(i z\in\mathbb{R}\land i z>1)\bigvee(z\in\mathbb{R}\land z<0)$$

01.14.27.1632.01

$$\tan^{-1}(z) == \frac{1}{2}\left(\sqrt{\frac{1}{z^2}}\,z+\sqrt{\frac{1}{1-i z}}\sqrt{1-i z}-\sqrt{i z+1}\sqrt{\frac{1}{i z+1}}\right)\pi+z\sqrt{-\frac{1}{z^2}}\cosh^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-z^2-1}}\right)$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\sqrt{\frac{z^2}{1+z^2}}\right)$

01.14.27.1633.01

$$\tan^{-1}(z) = i \cosh^{-1}\left(\sqrt{\frac{z^2}{z^2+1}}\right) + \frac{\pi}{2} /; 0 \leq \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1634.01

$$\tan^{-1}(z) = \frac{\pi}{2} - i \cosh^{-1}\left(\sqrt{\frac{z^2}{1+z^2}}\right) /; -\frac{\pi}{2} < \arg(z) < 0$$

01.14.27.1635.01

$$\tan^{-1}(z) = i \cosh^{-1}\left(\sqrt{\frac{z^2}{1+z^2}}\right) - \frac{\pi}{2} /; \frac{\pi}{2} < \arg(z) < \pi$$

01.14.27.1636.01

$$\tan^{-1}(z) = -\frac{\pi}{2} - i \cosh^{-1}\left(\sqrt{\frac{z^2}{1+z^2}}\right) /; -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.1637.01

$$\tan^{-1}(z) = \frac{\sqrt{z^2}}{z} \left(\sqrt{-\frac{1}{z^2+1}} \sqrt{z^2+1} \cosh^{-1}\left(\sqrt{\frac{z^2}{z^2+1}}\right) + \frac{\pi}{2}\right)$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\sqrt{\sqrt{1+z^2}+1} \Big/ \left(\sqrt{2} \left(1+z^2\right)^{1/4}\right)\right)$

01.14.27.1638.01

$$\tan^{-1}(z) = -2 i \cosh^{-1}\left(\frac{\sqrt{\sqrt{z^2+1}+1}}{\sqrt{2} \sqrt[4]{z^2+1}}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.1639.01

$$\tan^{-1}(z) = 2 i \cosh^{-1}\left(\frac{\sqrt{\sqrt{z^2+1}+1}}{\sqrt{2} \sqrt[4]{z^2+1}}\right) /; 0 < \arg(z) \leq \pi$$

01.14.27.1640.01

$$\tan^{-1}(z) = -\frac{2\sqrt{-z^2}}{z} \cosh^{-1}\left(\frac{\sqrt{\sqrt{1+z^2}+1}}{\sqrt{2} \left(1+z^2\right)^{1/4}}\right)$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\sqrt{\sqrt{1+z^2}-1} \Big/ \left(\sqrt{2}\,(1+z^2)^{1/4}\right)\right)$

01.14.27.1641.01

$$\tan^{-1}(z) = 2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z^2+1}-1}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) + \pi \;/;\; 0 \le \arg(z) \le \frac{\pi}{2}$$

01.14.27.1642.01

$$\tan^{-1}(z) = \pi - 2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z^2+1}-1}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) \;/;\; -\frac{\pi}{2} < \arg(z) < 0$$

01.14.27.1643.01

$$\tan^{-1}(z) = 2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z^2+1}-1}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) - \pi \;/;\; \frac{\pi}{2} < \arg(z) < \pi$$

01.14.27.1644.01

$$\tan^{-1}(z) = -2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z^2+1}-1}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) - \pi \;/;\; -\pi < \arg(z) \le -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.1645.01

$$\tan^{-1}(z) = 2\,z\sqrt{-\frac{1}{z^2}}\,\cosh^{-1}\left(\frac{\sqrt{\sqrt{z^2+1}-1}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) + \frac{\pi\sqrt{z^2}}{z}$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\sqrt{\left(\sqrt{1+z^2}+1\right) \Big/ \left(2\sqrt{1+z^2}\right)}\right)$

01.14.27.1646.01

$$\tan^{-1}(z) = -2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}+1}{2\sqrt{z^2+1}}}\right) \;/;\; -\pi < \arg(z) \le 0$$

01.14.27.1647.01

$$\tan^{-1}(z) = 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}+1}{2\sqrt{z^2+1}}}\right) /;\ 0 < \arg(z) \leq \pi$$

01.14.27.1648.01

$$\tan^{-1}(z) = -2\,\frac{\sqrt{-z^2}}{z}\cosh^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}+1}{2\sqrt{z^2+1}}}\right)$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\sqrt{\left(\sqrt{1+z^2}-1\right)\Big/\left(2\sqrt{1+z^2}\right)}\right)$

01.14.27.1649.01

$$\tan^{-1}(z) = \pi + 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-1}{2\sqrt{z^2+1}}}\right) /;\ 0 \leq \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1650.01

$$\tan^{-1}(z) = \pi - 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-1}{2\sqrt{z^2+1}}}\right) /;\ -\frac{\pi}{2} < \arg(z) < 0$$

01.14.27.1651.01

$$\tan^{-1}(z) = 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-1}{2\sqrt{z^2+1}}}\right) - \pi /;\ \frac{\pi}{2} < \arg(z) < \pi$$

01.14.27.1652.01

$$\tan^{-1}(z) = -2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-1}{2\sqrt{z^2+1}}}\right) - \pi /;\ -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.1653.01

$$\tan^{-1}(z) = 2\sqrt{-\frac{1}{z^2}}\,z\cosh^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-1}{2\sqrt{z^2+1}}}\right) + \frac{\pi\sqrt{z^2}}{z}$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\sqrt{\sqrt{1+z^2}+z}\Big/\left(\sqrt{2}\,\left(1+z^2\right)^{1/4}\right)\right)$

01.14.27.1654.01

$$\tan^{-1}(z) = \frac{\pi}{2} - 2\,i\cosh^{-1}\left(\frac{\sqrt{z+\sqrt{z^2+1}}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) /;\ \mathrm{Im}(z) < 0$$

01.14.27.1655.01

$$\tan^{-1}(z) = \frac{\pi}{2} + 2\,i\cosh^{-1}\left(\frac{\sqrt{z+\sqrt{z^2+1}}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) /;\ \mathrm{Im}(z) \geq 0$$

01.14.27.1656.01

$$\tan^{-1}(z) = 2\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\cosh^{-1}\left(\frac{\sqrt{z+\sqrt{z^2+1}}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\sqrt{\sqrt{1+z^2}-z}\Big/\left(\sqrt{2}\,(1+z^2)^{1/4}\right)\right)$

01.14.27.1657.01

$$\tan^{-1}(z) = -2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z^2+1}-z}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) - \frac{\pi}{2} /;\ \mathrm{Im}(z) \leq 0$$

01.14.27.1658.01

$$\tan^{-1}(z) = 2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z^2+1}-z}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) - \frac{\pi}{2} /;\ \mathrm{Im}(z) > 0$$

01.14.27.1659.01

$$\tan^{-1}(z) = -2\sqrt{\frac{1}{z}}\,\sqrt{-z}\,\cosh^{-1}\left(\frac{\sqrt{\sqrt{z^2+1}-z}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right) - \frac{\pi}{2}$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\sqrt{\left(\sqrt{1+z^2}+z\right)\Big/\left(2\sqrt{1+z^2}\right)}\right)$

01.14.27.1660.01

$$\tan^{-1}(z) = 2\,i\cosh^{-1}\left(\sqrt{\frac{z+\sqrt{z^2+1}}{2\sqrt{z^2+1}}}\right)+\frac{\pi}{2}\,/;\,\mathrm{Im}(z)\geq 0$$

01.14.27.1661.01

$$\tan^{-1}(z) = \frac{\pi}{2}-2\,i\cosh^{-1}\left(\sqrt{\frac{z+\sqrt{z^2+1}}{2\sqrt{z^2+1}}}\right)\,/;\,-\pi<\arg(z)<-\frac{\pi}{2}\bigvee-\frac{\pi}{2}<\arg(z)<0\bigvee(i\,z\in\mathbb{R}\land 0<i\,z<1)$$

01.14.27.1662.01

$$\tan^{-1}(z) = -2\,i\cosh^{-1}\left(\sqrt{\frac{z+\sqrt{z^2+1}}{2\sqrt{z^2+1}}}\right)-\frac{3\pi}{2}\,/;\,(i\,z\in\mathbb{R}\land i\,z>1)$$

01.14.27.1663.01

$$\tan^{-1}(z) = \pi\left(\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}}-\frac{1}{2}\right)+2\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\cosh^{-1}\left(\sqrt{\frac{z+\sqrt{z^2+1}}{2\sqrt{z^2+1}}}\right)$$

Involving $\tan^{-1}(z)$ and $\cosh^{-1}\left(\sqrt{\left(\sqrt{1+z^2}-z\right)\Big/\left(2\sqrt{1+z^2}\right)}\right)$

01.14.27.1664.01

$$\tan^{-1}(z) = -2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-z}{2\sqrt{z^2+1}}}\right)-\frac{\pi}{2}\,/;\,\mathrm{Im}(z)\leq 0$$

01.14.27.1665.01

$$\tan^{-1}(z) = 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-z}{2\sqrt{z^2+1}}}\right)-\frac{\pi}{2}\,/;\,0<\arg(z)<\frac{\pi}{2}\bigvee\frac{\pi}{2}<\arg(z)<\pi\bigvee(i\,z\in\mathbb{R}\land -1<i\,z<0)$$

01.14.27.1666.01

$$\tan^{-1}(z) = 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-z}{2\sqrt{z^2+1}}}\right)+\frac{3\pi}{2}\,/;\,(i\,z\in\mathbb{R}\land i\,z<-1)$$

01.14.27.1667.01

$$\tan^{-1}(z) = \left(-\sqrt{i\,z+1}\,\sqrt{\frac{1}{i\,z+1}}+\frac{1}{2}\right)\pi-2\sqrt{-z}\,\sqrt{\frac{1}{z}}\,\cosh^{-1}\left(\sqrt{\frac{\sqrt{z^2+1}-z}{2\sqrt{z^2+1}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$

Involving $\tan^{-1}(\sqrt{z})$ and $\cosh^{-1}\left(\frac{1-z}{1+z}\right)$

01.14.27.1668.01

$$\tan^{-1}(\sqrt{z}) == -\frac{i}{2}\cosh^{-1}\left(\frac{1-z}{1+z}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.1669.01

$$\tan^{-1}(\sqrt{z}) == \frac{i}{2}\cosh^{-1}\left(\frac{1-z}{1+z}\right) /; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1670.01

$$\tan^{-1}(\sqrt{z}) == \frac{i}{2}\cosh^{-1}\left(\frac{1-z}{1+z}\right) + \pi /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1671.01

$$\tan^{-1}(\sqrt{z}) == \frac{1}{2}\left(1 - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\right)\pi - \frac{\sqrt{-z}}{2\sqrt{z}}\cosh^{-1}\left(\frac{1-z}{1+z}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cosh^{-1}\left(\frac{z-1}{z+1}\right)$

01.14.27.1672.01

$$\tan^{-1}(\sqrt{z}) == \frac{1}{2}i\cosh^{-1}\left(\frac{z-1}{z+1}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) \geq 0$$

01.14.27.1673.01

$$\tan^{-1}(\sqrt{z}) == -\frac{1}{2}i\cosh^{-1}\left(\frac{z-1}{z+1}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) < 0$$

01.14.27.1674.01

$$\tan^{-1}(\sqrt{z}) == \frac{1}{2}\sqrt{-\frac{1}{z}}\sqrt{z}\cosh^{-1}\left(\frac{z-1}{z+1}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cosh^{-1}\left(\frac{2\sqrt{z}}{1+z}\right)$

01.14.27.1675.01

$$\tan^{-1}(\sqrt{z}) == \frac{1}{2}\left(\frac{\pi}{2} - i\cosh^{-1}\left(\frac{2\sqrt{z}}{z+1}\right)\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.1676.01

$$\tan^{-1}(\sqrt{z}) == \frac{1}{2}\left(i\cosh^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) + \frac{\pi}{2}\right) /; 0 < \arg(z) \leq \pi \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1677.01

$$\tan^{-1}(\sqrt{z}) == \frac{1}{2}\left(\frac{\pi}{2} - \sqrt{\frac{1}{z-1}}\sqrt{z-1}\sqrt{\frac{1}{z}}\sqrt{-z}\cosh^{-1}\left(\frac{2\sqrt{z}}{z+1}\right)\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cosh^{-1}\left(\frac{1}{\sqrt{z+1}}\right)$

01.14.27.1678.01

$$\tan^{-1}\left(\sqrt{z}\right) = -i \cosh^{-1}\left(\frac{1}{\sqrt{z+1}}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.1679.01

$$\tan^{-1}\left(\sqrt{z}\right) = i \cosh^{-1}\left(\frac{1}{\sqrt{z+1}}\right) /; 0 < \arg(z) \leq \pi$$

01.14.27.1680.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\frac{\sqrt{-z}}{\sqrt{z}} \cosh^{-1}\left(\frac{1}{\sqrt{z+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cosh^{-1}\left(\sqrt{\frac{1}{z+1}}\right)$

01.14.27.1681.01

$$\tan^{-1}\left(\sqrt{z}\right) = -i \cosh^{-1}\left(\sqrt{\frac{1}{z+1}}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.1682.01

$$\tan^{-1}\left(\sqrt{z}\right) = i \cosh^{-1}\left(\sqrt{\frac{1}{z+1}}\right) /; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1683.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi + i \cosh^{-1}\left(\sqrt{\frac{1}{z+1}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1684.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{1}{2}\left(1 - \sqrt{z+1}\sqrt{\frac{1}{z+1}}\right)\pi - \frac{\sqrt{-z}}{\sqrt{z}} \cosh^{-1}\left(\sqrt{\frac{1}{z+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cosh^{-1}\left(\frac{\sqrt{z}}{\sqrt{1+z}}\right)$

01.14.27.1685.01

$$\tan^{-1}\left(\sqrt{z}\right) = i \cosh^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) \geq 0$$

01.14.27.1686.01

$$\tan^{-1}\left(\sqrt{z}\right) = -i \cosh^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) < 0$$

01.14.27.1687.01

$$\tan^{-1}\left(\sqrt{z}\right) = \sqrt{-\frac{1}{z}}\sqrt{z} \cosh^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cosh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-1-z}}\right)$

01.14.27.1688.01

$$\tan^{-1}(\sqrt{z}) = i\cosh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) + \frac{\pi}{2} /; 0 \leq \arg(z) < \pi \bigvee (z \in \mathbb{R} \wedge z < -1)$$

01.14.27.1689.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} - i\cosh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-1-z}}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.1690.01

$$\tan^{-1}(\sqrt{z}) = i\cosh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \wedge -1 < z < 0)$$

01.14.27.1691.01

$$\tan^{-1}(\sqrt{z}) = \sqrt{-\frac{1}{z}}\sqrt{z}\cosh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) + \frac{1}{2}\pi\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cosh^{-1}\left(\sqrt{\frac{z}{1+z}}\right)$

01.14.27.1692.01

$$\tan^{-1}(\sqrt{z}) = i\cosh^{-1}\left(\sqrt{\frac{z}{z+1}}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) \geq 0$$

01.14.27.1693.01

$$\tan^{-1}(\sqrt{z}) = -i\cosh^{-1}\left(\sqrt{\frac{z}{z+1}}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) < 0$$

01.14.27.1694.01

$$\tan^{-1}(\sqrt{z}) = \sqrt{-\frac{1}{z+1}}\sqrt{z+1}\cosh^{-1}\left(\sqrt{\frac{z}{z+1}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}(\sqrt{z})$ and $\cosh^{-1}\left(\sqrt{\sqrt{1+z}+1} \middle/ \left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.1695.01

$$\tan^{-1}(\sqrt{z}) = 2i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}+1}}{\sqrt{2}\sqrt[4]{z+1}}\right) /; 0 < \arg(z) \leq \pi$$

01.14.27.1696.01

$$\tan^{-1}(\sqrt{z}) = -2i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}+1}}{\sqrt{2}\sqrt[4]{z+1}}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.1697.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\frac{2\sqrt{-z^2}}{z}\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}+1}}{\sqrt{2}\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cosh^{-1}\left(\sqrt{\sqrt{1+z}-1}\,/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.1698.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi + 2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\sqrt[4]{z+1}}\right) /;\ \operatorname{Im}(z) \geq 0$$

01.14.27.1699.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi - 2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\sqrt[4]{z+1}}\right) /;\ \operatorname{Im}(z) < 0$$

01.14.27.1700.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\sqrt{-\frac{1}{z}}\sqrt{z}\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\sqrt[4]{z+1}}\right) + \pi$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cosh^{-1}\left(\sqrt{\left(\sqrt{1+z}+1\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.1701.01

$$\tan^{-1}\left(\sqrt{z}\right) = -2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}+1}{2\sqrt{z+1}}}\right) /;\ -\pi < \arg(z) \leq 0$$

01.14.27.1702.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}+1}{2\sqrt{z+1}}}\right) /;\ 0 < \arg(z) \leq \pi$$

01.14.27.1703.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\frac{2\sqrt{-z}}{\sqrt{z}}\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}+1}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cosh^{-1}\left(\sqrt{\left(\sqrt{1+z}-1\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.1704.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi + 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}-1}{2\sqrt{z+1}}}\right) /;\ \operatorname{Im}(z) \geq 0$$

01.14.27.1705.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi - 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}-1}{2\sqrt{z+1}}}\right) /;\ \operatorname{Im}(z) < 0$$

01.14.27.1706.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\sqrt{-\frac{1}{z}}\,\sqrt{z}\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}-1}{2\sqrt{z+1}}}\right) + \pi$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cosh^{-1}\left(\sqrt{\sqrt{1+z}+\sqrt{z}} \Big/ \left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.1707.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} + 2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /;\ \operatorname{Im}(z) \geq 0$$

01.14.27.1708.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - 2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /;\ \operatorname{Im}(z) < 0$$

01.14.27.1709.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\sqrt{-\frac{1}{z}}\,\sqrt{z}\cosh^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cosh^{-1}\left(\sqrt{\sqrt{1+z}-\sqrt{z}} \Big/ \left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.1710.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) - \frac{\pi}{2} /;\ 0 < \arg(z) \leq \pi$$

01.14.27.1711.01

$$\tan^{-1}\left(\sqrt{z}\right) = -2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) - \frac{\pi}{2} /;\ -\pi < \arg(z) \leq 0$$

01.14.27.1712.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\frac{2\sqrt{-z^2}}{z}\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) - \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cosh^{-1}\left(\sqrt{\left(\sqrt{1+z}+\sqrt{z}\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.1713.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} + 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z} + \sqrt{z+1}}{2\sqrt{z+1}}}\right) /;\ \mathrm{Im}(z) \geq 0$$

01.14.27.1714.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z} + \sqrt{z+1}}{2\sqrt{z+1}}}\right) /;\ \mathrm{Im}(z) < 0$$

01.14.27.1715.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\cosh^{-1}\left(\sqrt{\frac{\sqrt{z} + \sqrt{z+1}}{2\sqrt{z+1}}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\cosh^{-1}\left(\sqrt{\left(\sqrt{1+z} - \sqrt{z}\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.1716.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1} - \sqrt{z}}{2\sqrt{z+1}}}\right) - \frac{\pi}{2} /;\ \mathrm{Im}(z) > 0 \lor (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1717.01

$$\tan^{-1}\left(\sqrt{z}\right) = -2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1} - \sqrt{z}}{2\sqrt{z+1}}}\right) - \frac{\pi}{2} /;\ -\pi < \arg(z) \leq 0$$

01.14.27.1718.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1} - \sqrt{z}}{2\sqrt{z+1}}}\right) + \frac{3\pi}{2} /;\ (z \in \mathbb{R} \land z < -1)$$

01.14.27.1719.01

$$\tan^{-1}\left(\sqrt{z}\right) = \left(-\sqrt{\frac{1}{z+1}}\,\sqrt{z+1} + \frac{1}{2}\right)\pi - \frac{2\sqrt{-z^2}}{z}\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1} - \sqrt{z}}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\frac{1-z}{1+z}\right)$

01.14.27.1720.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - \frac{1}{2}\,i\cosh^{-1}\left(\frac{1-z}{z+1}\right) /;\ \mathrm{Im}(z) > 0$$

01.14.27.1721.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} + \frac{1}{2}\,i\cosh^{-1}\left(\frac{1-z}{z+1}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.1722.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{i}{2}\cosh^{-1}\left(\frac{1-z}{z+1}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1723.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\sqrt{-z^2}}{2\,z}\cosh^{-1}\left(\frac{1-z}{1+z}\right) + \frac{\pi}{2}\sqrt{\frac{1}{z}}\,\sqrt{z}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\frac{z-1}{z+1}\right)$

01.14.27.1724.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{i}{2}\cosh^{-1}\left(\frac{z-1}{z+1}\right) /; 0 \leq \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.1725.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\,i\cosh^{-1}\left(\frac{z-1}{z+1}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.1726.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{i}{2}\cosh^{-1}\left(\frac{z-1}{z+1}\right) - \pi /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1727.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\left(\sqrt{\frac{z}{z+1}}\,\sqrt{\frac{z+1}{z}} - 1\right)\pi - \frac{1}{2}\sqrt{z}\,\sqrt{-\frac{1}{z}}\,\cosh^{-1}\left(\frac{z-1}{z+1}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\frac{2\sqrt{z}}{1+z}\right)$

01.14.27.1728.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\,i\cosh^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) + \frac{\pi}{4} /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.1729.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4} - \frac{1}{2}\,i\cosh^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) /; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land 0 < z < 1) \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.1730.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{i}{2}\cosh^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) - \frac{3\pi}{4} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1731.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\pi\left(\sqrt{\frac{z}{z+1}}\,\sqrt{\frac{z+1}{z}} - 1\right) + \frac{\sqrt{1-z}}{2\sqrt{z-1}}\cosh^{-1}\left(\frac{2\sqrt{z}}{z+1}\right) + \frac{\pi}{4}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\frac{1}{\sqrt{1+z}}\right)$

01.14.27.1732.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - i\cosh^{-1}\left(\frac{1}{\sqrt{z+1}}\right) /; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.1733.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i\cosh^{-1}\left(\frac{1}{\sqrt{z+1}}\right) + \frac{\pi}{2} /; -\pi < \arg(z) \leq 0$$

01.14.27.1734.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i\cosh^{-1}\left(\frac{1}{\sqrt{z+1}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1735.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\sqrt{-z^2}}{z}\cosh^{-1}\left(\frac{1}{\sqrt{z+1}}\right) + \frac{1}{2}\pi\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\sqrt{\frac{1}{1+z}}\right)$

01.14.27.1736.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - i\cosh^{-1}\left(\sqrt{\frac{1}{z+1}}\right) /; \operatorname{Im}(z) > 0$$

01.14.27.1737.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i\cosh^{-1}\left(\sqrt{\frac{1}{z+1}}\right) + \frac{\pi}{2} /; -\pi < \arg(z) \leq 0$$

01.14.27.1738.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i\cosh^{-1}\left(\sqrt{\frac{1}{z+1}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1739.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\sqrt{-z^2}}{z}\cosh^{-1}\left(\sqrt{\frac{1}{z+1}}\right) + \frac{1}{2}\pi\sqrt{\frac{1}{z}}\sqrt{z}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right)$

01.14.27.1740.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i\cosh^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.1741.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i \cosh^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) /; 0 \leq \arg(z) < \pi \bigvee (z \in \mathbb{R} \wedge z < -1)$$

01.14.27.1742.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i \cosh^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right) - \pi /; (z \in \mathbb{R} \wedge -1 < z < 0)$$

01.14.27.1743.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z}{z+1}} \sqrt{\frac{z+1}{z}} - 1\right) - \sqrt{z} \sqrt{-\frac{1}{z}} \cosh^{-1}\left(\frac{\sqrt{z}}{\sqrt{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right)$

01.14.27.1744.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i \cosh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) /; \operatorname{Im}(z) \geq 0$$

01.14.27.1745.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i \cosh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.1746.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\sqrt{z} \sqrt{-\frac{1}{z}} \cosh^{-1}\left(\frac{\sqrt{-z}}{\sqrt{-z-1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\sqrt{\frac{z}{z+1}}\right)$

01.14.27.1747.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i \cosh^{-1}\left(\sqrt{\frac{z}{z+1}}\right) /; 0 \leq \arg(z) < \pi \bigvee (z \in \mathbb{R} \wedge z < -1)$$

01.14.27.1748.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i \cosh^{-1}\left(\sqrt{\frac{z}{z+1}}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.1749.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i \cosh^{-1}\left(\sqrt{\frac{z}{z+1}}\right) - \pi /; (z \in \mathbb{R} \wedge -1 < z < 0)$$

01.14.27.1750.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z}{z+1}} \sqrt{\frac{z+1}{z}} - 1\right) - \sqrt{z} \sqrt{-\frac{1}{z}} \cosh^{-1}\left(\sqrt{\frac{z}{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\sqrt{\sqrt{1+z}+1} \Big/ \left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.1751.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == 2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}+1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)+\frac{\pi}{2}\ /;\ -\pi<\arg(z)\leq 0$$

01.14.27.1752.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2}-2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}+1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)\ /;\ \mathrm{Im}(z)>0\lor(z\in\mathbb{R}\land z<-1)$$

01.14.27.1753.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}+1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)-\frac{\pi}{2}\ /;\ (z\in\mathbb{R}\land -1<z<0)$$

01.14.27.1754.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{2\sqrt{-z^2}}{z}\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}+1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)+\frac{1}{2}\pi\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\sqrt{\sqrt{1+z}-1}\Big/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.1755.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)-\frac{\pi}{2}\ /;\ 0\leq\arg(z)<\pi\bigvee(z\in\mathbb{R}\land z<-1)$$

01.14.27.1756.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == 2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)-\frac{\pi}{2}\ /;\ \mathrm{Im}(z)<0$$

01.14.27.1757.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == -2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)-\frac{3\pi}{2}\ /;\ (z\in\mathbb{R}\land -1<z<0)$$

01.14.27.1758.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2}\left(\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}-2\right)-2\sqrt{z}\sqrt{-\frac{1}{z}}\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}-1}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\sqrt{\left(\sqrt{1+z}+1\right)\Big/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.1759.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) == \frac{\pi}{2}-2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}+1}{2\sqrt{z+1}}}\right)\ /;\ \mathrm{Im}(z)>0\lor(z\in\mathbb{R}\land z<-1)$$

01.14.27.1760.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}+1}{2\sqrt{z+1}}}\right) + \frac{\pi}{2} \;/;\; -\pi < \arg(z) \leq 0$$

01.14.27.1761.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}+1}{2\sqrt{z+1}}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1762.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{2\sqrt{-z^2}}{z}\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}+1}{2\sqrt{z+1}}}\right) + \frac{1}{2}\pi\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\sqrt{\left(\sqrt{1+z}-1\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.1763.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}-1}{2\sqrt{z+1}}}\right) - \frac{\pi}{2} \;/;\; 0 \leq \arg(z) < \pi \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.1764.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}-1}{2\sqrt{z+1}}}\right) - \frac{\pi}{2} \;/;\; \operatorname{Im}(z) < 0$$

01.14.27.1765.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}-1}{2\sqrt{z+1}}}\right) - \frac{3\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1766.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\left(\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 2\right)\pi - 2\sqrt{z}\sqrt{-\frac{1}{z}}\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}-1}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\sqrt{\sqrt{1+z}+\sqrt{z}}\Big/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.1767.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\sqrt[4]{z+1}}\right) \;/;\; 0 \leq \arg(z) < \pi \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.1768.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\sqrt[4]{z+1}}\right) \;/;\; \operatorname{Im}(z) < 0$$

01.14.27.1769.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) - \pi \,/;\, (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1770.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z}{z+1}}\,\sqrt{\frac{z+1}{z}} - 1\right) - 2\sqrt{z}\,\sqrt{-\frac{1}{z}}\,\cosh^{-1}\left(\frac{\sqrt{\sqrt{z}+\sqrt{z+1}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\sqrt{\sqrt{1+z}-\sqrt{z}}\,\Big/\left(\sqrt{2}\,(1+z)^{1/4}\right)\right)$

01.14.27.1771.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \pi - 2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /;\, \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.1772.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) + \pi \,/;\, -\pi < \arg(z) \le 0$$

01.14.27.1773.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right) /;\, (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1774.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\pi\left(\sqrt{\frac{z+1}{z}}\,\sqrt{\frac{z}{z+1}} + 1\right) + \frac{2\sqrt{-z^2}}{z}\cosh^{-1}\left(\frac{\sqrt{\sqrt{z+1}-\sqrt{z}}}{\sqrt{2}\,\sqrt[4]{z+1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\sqrt{\left(\sqrt{1+z}+\sqrt{z}\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.1775.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right) /;\, 0 \le \arg(z) < \pi \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.1776.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right) /;\, \operatorname{Im}(z) < 0$$

01.14.27.1777.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right) - \pi \,/;\, (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1778.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\left(\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 1\right)\pi - 2\sqrt{z}\sqrt{-\frac{1}{z}}\cosh^{-1}\left(\sqrt{\frac{\sqrt{z}+\sqrt{z+1}}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\sqrt{\left(\sqrt{1+z}-\sqrt{z}\right)/\left(2\sqrt{1+z}\right)}\right)$

01.14.27.1779.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right) + \pi \;/;\; -\pi < \arg(z) \le 0$$

01.14.27.1780.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \pi - 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right) \;/;\; \operatorname{Im}(z) > 0$$

01.14.27.1781.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right) \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1782.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\pi - 2\,i\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right) \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1783.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(2\sqrt{\frac{1}{z+1}}\sqrt{z+1} + \sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 1\right) + \frac{2\sqrt{-z^2}}{z}\cosh^{-1}\left(\sqrt{\frac{\sqrt{z+1}-\sqrt{z}}{2\sqrt{z+1}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$ and $\cosh^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.1784.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = i\cosh^{-1}\left(\frac{1}{\sqrt{z}}\right) \;/;\; 0 < \arg(z) \le \pi \lor (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1785.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = -i\cosh^{-1}\left(\frac{1}{\sqrt{z}}\right) \;/;\; -\pi < \arg(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.1786.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = \frac{\sqrt{z-1}}{\sqrt{1-z}}\cosh^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$ and $\cosh^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.1787.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = i\cosh^{-1}\left(\sqrt{\frac{1}{z}}\right) /; 0 < \arg(z) < \pi \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1788.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = -i\cosh^{-1}\left(\sqrt{\frac{1}{z}}\right) /; -\pi < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1789.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = i\cosh^{-1}\left(\sqrt{\frac{1}{z}}\right) + \pi /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1790.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = \frac{\pi}{2}\left(1 - \sqrt{z}\sqrt{\frac{1}{z}}\right) + \frac{\sqrt{z-1}}{\sqrt{1-z}}\cosh^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$ and $\cosh^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.1791.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{\pi}{2} - i\cosh^{-1}\left(\frac{1}{\sqrt{z}}\right) /; 0 < \arg(z) \leq \pi$$

01.14.27.1792.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = i\cosh^{-1}\left(\frac{1}{\sqrt{z}}\right) + \frac{\pi}{2} /; -\pi < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1793.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = -i\cosh^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1794.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{1}{2}\pi\sqrt{\frac{z}{z-1}}\sqrt{\frac{z-1}{z}} - \frac{\sqrt{z-1}}{\sqrt{1-z}}\cosh^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$ and $\cosh^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.1795.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{\pi}{2} - i\cosh^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\ \text{Im}(z) > 0$$

01.14.27.1796.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = i\cosh^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2} /;\ \text{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.1797.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = -i\cosh^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} /;\ (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1798.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{\pi}{2}\sqrt{\frac{1}{z-1}}\sqrt{z-1} - \frac{\sqrt{z-1}}{\sqrt{1-z}}\cosh^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$ and $\cosh^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.1799.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \frac{\pi}{2} - i\cosh^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ 0 < \arg(z) < \pi$$

01.14.27.1800.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = i\cosh^{-1}\left(\frac{1}{\sqrt{z}}\right) + \frac{\pi}{2} /;\ -\pi < \arg(z) \leq 0$$

01.14.27.1801.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = i\cosh^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2} /;\ (z \in \mathbb{R} \land z < 0)$$

01.14.27.1802.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \sqrt{1-z}\sqrt{\frac{1}{z-1}}\cosh^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi\sqrt{-z}\sqrt{1-z}}{2\sqrt{z}}\sqrt{\frac{1}{z-1}}$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$ and $\cosh^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.1803.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \frac{\pi}{2} - i\cosh^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\ 0 < \arg(z) < \pi$$

01.14.27.1804.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = i \cosh^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2} \;/;\; \operatorname{Im}(z) \leq 0$$

01.14.27.1805.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \sqrt{1-z}\,\sqrt{\frac{1}{z-1}}\,\cosh^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$ and $\cosh^{-1}\left(\sqrt{z}\right)$

01.14.27.1806.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = i \cosh^{-1}\left(\sqrt{z}\right) \;/;\; -\pi < \arg(z) < 0 \vee (z \in \mathbb{R} \wedge z > 1)$$

01.14.27.1807.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = -i \cosh^{-1}\left(\sqrt{z}\right) \;/;\; \operatorname{Im}(z) > 0 \vee (z \in \mathbb{R} \wedge 0 < z < 1)$$

01.14.27.1808.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = -i \cosh^{-1}\left(\sqrt{z}\right) - \pi \;/;\; (z \in \mathbb{R} \wedge z < 0)$$

01.14.27.1809.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \frac{1}{2}\pi\left(\sqrt{z}\,\sqrt{\frac{1}{z}} - 1\right) - \frac{\sqrt{z-1}}{\sqrt{1-z}}\cosh^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$ and $\cosh^{-1}\left(\sqrt{z}\right)$

01.14.27.1810.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = i \cosh^{-1}\left(\sqrt{z}\right) \;/;\; \operatorname{Im}(z) > 0$$

01.14.27.1811.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = -i \cosh^{-1}\left(\sqrt{z}\right) \;/;\; -\pi < \arg(z) \leq 0$$

01.14.27.1812.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = i \cosh^{-1}\left(\sqrt{z}\right) + \pi \;/;\; (z \in \mathbb{R} \wedge z < 0)$$

01.14.27.1813.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \frac{1}{2}\pi\left(1-\sqrt{z}\sqrt{\frac{1}{z}}\right) + \frac{\sqrt{z}}{\sqrt{-z}}\cosh^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$ and $\cosh^{-1}\left(\sqrt{z}\right)$

01.14.27.1814.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = -i\cosh^{-1}\left(\sqrt{z}\right) /; 0 < \arg(z) < \pi \lor (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1815.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = i\cosh^{-1}\left(\sqrt{z}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.1816.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = i\cosh^{-1}\left(\sqrt{z}\right) + \pi /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.1817.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \frac{1}{2}\pi\left(1-\sqrt{z}\sqrt{\frac{1}{z}}\right) - \frac{\sqrt{z-1}\sqrt{z}}{\sqrt{1-z}}\sqrt{\frac{1}{z}}\cosh^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$ and $\cosh^{-1}\left(\sqrt{z}\right)$

01.14.27.1818.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{\pi}{2} + i\cosh^{-1}\left(\sqrt{z}\right) /; 0 < \arg(z) \leq \pi \lor (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1819.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{\pi}{2} - i\cosh^{-1}\left(\sqrt{z}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.1820.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = -\frac{\pi}{2} - i\cosh^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1821.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{1}{2}\pi\sqrt{1-z}\sqrt{\frac{1}{1-z}} + \frac{\sqrt{z-1}}{\sqrt{1-z}}\cosh^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$ and $\cosh^{-1}\left(\sqrt{z}\right)$

01.14.27.1822.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = -i\cosh^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} \;/;\; 0 < \arg(z) \leq \pi$$

01.14.27.1823.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = i\cosh^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} \;/;\; \operatorname{Im}(z) < 0$$

01.14.27.1824.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = i\cosh^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z > 0)$$

01.14.27.1825.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = i\cosh^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z > 0)$$

01.14.27.1826.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\sqrt{-z}}{\sqrt{z}}\cosh^{-1}\left(\sqrt{z}\right) - \frac{\pi\sqrt{-z}}{2}\sqrt{-\frac{1}{z}}$$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$ and $\cosh^{-1}\left(\sqrt{z}\right)$

01.14.27.1827.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2} + i\cosh^{-1}\left(\sqrt{z}\right) \;/;\; \operatorname{Im}(z) \geq 0$$

01.14.27.1828.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2} - i\cosh^{-1}\left(\sqrt{z}\right) \;/;\; \operatorname{Im}(z) < 0$$

01.14.27.1829.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \sqrt{-\frac{1}{z}}\sqrt{z}\cosh^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+c z}}{\sqrt{1-c z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{1-z}}\right)$ and $\cosh^{-1}(z)$

01.14.27.1830.01

$$\tan^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{1-z}}\right) = \frac{\pi}{2} - \frac{1}{2} i \cosh^{-1}(z) \;/;\; \operatorname{Im}(z) < 0$$

01.14.27.1831.01

$$\tan^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{1-z}}\right) = \frac{i}{2} \cosh^{-1}(z) + \frac{\pi}{2} \;/;\; 0 < \arg(z) \leq \pi \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1832.01

$$\tan^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{1-z}}\right) = -\frac{i}{2} \cosh^{-1}(z) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1833.01

$$\tan^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{1-z}}\right) = \frac{\sqrt{z-1}}{2\sqrt{1-z}} \cosh^{-1}(z) + \frac{\pi}{2} \sqrt{\frac{1}{1-z}} \sqrt{1-z}$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right)$ and $\cosh^{-1}(z)$

01.14.27.1834.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z+1}}\right) = \frac{i}{2} \cosh^{-1}(z) \;/;\; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.1835.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z+1}}\right) = -\frac{i}{2} \cosh^{-1}(z) \;/;\; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land -1 < z < 1)$$

01.14.27.1836.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z+1}}\right) = -\frac{i}{2} \cosh^{-1}(z) - \pi \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1837.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z+1}}\right) = \frac{\pi}{2}\left(\sqrt{z+1} \sqrt{\frac{1}{z+1}} - 1\right) + \frac{\sqrt{1-z}}{2\sqrt{z-1}} \cosh^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-1+c z}}{\sqrt{-1-c z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{z-1}}\right)$ and $\cosh^{-1}(z)$

01.14.27.1838.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{1}{2}\,i\cosh^{-1}(z) - \frac{\pi}{2}\ /;\ \operatorname{Im}(z) < 0$$

01.14.27.1839.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = -\frac{i}{2}\cosh^{-1}(z) - \frac{\pi}{2}\ /;\ \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.1840.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{1}{2}\,i\cosh^{-1}(z) + \frac{\pi}{2}\ /;\ (z \in \mathbb{R} \land z > -1)$$

01.14.27.1841.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{\sqrt{-z-1}}{2\sqrt{z+1}}\cosh^{-1}(z) - \frac{\pi}{2}\sqrt{-z-1}\sqrt{-\frac{1}{z+1}}$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right)$ and $\cosh^{-1}(z)$

01.14.27.1842.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{i}{2}\cosh^{-1}(z)\ /;\ \operatorname{Im}(z) > 0$$

01.14.27.1843.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = -\frac{i}{2}\cosh^{-1}(z)\ /;\ -\pi < \arg(z) \le 0 \lor (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1844.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{i}{2}\cosh^{-1}(z) + \pi\ /;\ (z \in \mathbb{R} \land z < -1)$$

01.14.27.1845.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{\sqrt{z+1}}{2\sqrt{-z-1}}\cosh^{-1}(z) - \frac{1}{2}\left(\sqrt{\frac{1}{z+1}}\sqrt{z+1} - 1\right)\pi$$

Involving $\tan^{-1}\left(\sqrt{\frac{1+c\,z}{1-c\,z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right)$ and $\cosh^{-1}(z)$

01.14.27.1846.01

$$\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right) = \frac{1}{2}\,i\cosh^{-1}(z) + \frac{\pi}{2}\ /;\ \operatorname{Im}(z) \ge 0$$

01.14.27.1847.01

$$\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right) = -\frac{1}{2}\,i\cosh^{-1}(z) + \frac{\pi}{2} \;/;\; \operatorname{Im}(z) < 0$$

01.14.27.1848.01

$$\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right) = \frac{1}{2}\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\cosh^{-1}(z) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right)$ and $\cosh^{-1}(z)$

01.14.27.1849.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = -\frac{i}{2}\cosh^{-1}(z) \;/;\; \operatorname{Im}(z) > 0 \land (z \in \mathbb{R} \land -1 < z < 1)$$

01.14.27.1850.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = \frac{i}{2}\cosh^{-1}(z) \;/;\; \operatorname{Im}(z) < 0 \land (z \in \mathbb{R} \land z > 1)$$

01.14.27.1851.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = \frac{i}{2}\cosh^{-1}(z) + \pi \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1852.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = -\frac{\pi}{2}\left(\sqrt{\frac{1}{z+1}}\,\sqrt{z+1} - 1\right) - \frac{1}{2}\sqrt{\frac{1}{1-z}}\,\sqrt{1-z}\,\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\cosh^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{z^2-1}\right)$

Involving $\tan^{-1}\left(\sqrt{z^2-1}\right)$ and $\cosh^{-1}\left(\frac{1}{z}\right)$

01.14.27.1853.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = i\cosh^{-1}\left(\frac{1}{z}\right) \;/;\; 0 < \arg(z) \le \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1854.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = -i\cosh^{-1}\left(\frac{1}{z}\right) \;/;\; -\frac{\pi}{2} < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1855.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = \pi - i\cosh^{-1}\left(\frac{1}{z}\right) \;/;\; \frac{\pi}{2} < \arg(z) < \pi$$

01.14.27.1856.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = i\cosh^{-1}\left(\frac{1}{z}\right) + \pi \;/;\; -\pi < \arg(z) \le -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.1857.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = i\cosh^{-1}\left(\frac{1}{z}\right) + \pi \;/;\; -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.1858.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = \frac{\pi}{2}\left(1 - \frac{\sqrt{z^2}}{z}\right) + \frac{\sqrt{z-1}\,\sqrt{z^2}}{\sqrt{1-z}\,\sqrt{z}}\sqrt{\frac{1}{z}}\cosh^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right)$ and $\cosh^{-1}\left(\frac{1}{z}\right)$

01.14.27.1859.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \frac{\pi}{2} - i\cosh^{-1}\left(\frac{1}{z}\right) \;/;\; 0 < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1860.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = i\cosh^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; -\frac{\pi}{2} < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1861.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = i\cosh^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; \frac{\pi}{2} < \arg(z) < \pi$$

01.14.27.1862.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = -i\cosh^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1) \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1863.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = -i\cosh^{-1}\left(\frac{1}{z}\right) - \frac{3\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1864.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z-1}}\sqrt{\frac{z-1}{z+1}} + \frac{\sqrt{z^2}}{z} - 1\right) - \frac{\sqrt{z-1}\,\sqrt{z^2}}{\sqrt{1-z}\,\sqrt{z}}\sqrt{\frac{1}{z}}\cosh^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right)$ and $\cosh^{-1}\left(\frac{1}{z}\right)$

01.14.27.1865.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \frac{\pi}{2} - i\cosh^{-1}\left(\frac{1}{z}\right) /; 0 < \arg(z) < \frac{\pi}{2}$$

01.14.27.1866.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = i\cosh^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} /; -\frac{\pi}{2} \leq \arg(z) \leq 0$$

01.14.27.1867.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = i\cosh^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} /; \frac{\pi}{2} \leq \arg(z) < \pi$$

01.14.27.1868.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = -i\cosh^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.1869.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = i\cosh^{-1}\left(\frac{1}{z}\right) + \frac{3\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1870.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \frac{1}{2}\sqrt{\frac{1}{z^2-1}}\sqrt{z^2-1}\left(\sqrt{\frac{z+1}{z-1}}\sqrt{\frac{z-1}{z+1}} + \frac{\sqrt{z^2}}{z} - 1\right)\pi - \sqrt{-z-1}\sqrt{-\frac{1}{z^4}}\, z^2\sqrt{-\frac{1}{z+1}}\cosh^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)$

Involving $\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)$ and $\cosh^{-1}\left(\frac{1}{z}\right)$

01.14.27.1871.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = i\cosh^{-1}\left(\frac{1}{z}\right) /; 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1872.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = -i\cosh^{-1}\left(\frac{1}{z}\right) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1873.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = i\cosh^{-1}\left(\frac{1}{z}\right) - \pi /; \frac{\pi}{2} < \arg(z) < \pi$$

01.14.27.1874.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = -i\cosh^{-1}\left(\frac{1}{z}\right) - \pi /; -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.1875.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = \frac{\pi}{2}\left(\frac{\sqrt{z^2}}{z} - 1\right) + \frac{1}{\sqrt{\frac{1}{z}-1}}\sqrt{1-\frac{1}{z}}\cosh^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)$ and $\cosh^{-1}(z)$

01.14.27.1876.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = i\cosh^{-1}(z) + \frac{\pi}{2} /; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land -1 < z < 1)$$

01.14.27.1877.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = -i\cosh^{-1}(z) + \frac{\pi}{2} /; \operatorname{Im}(z) < 0$$

01.14.27.1878.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = -i\cosh^{-1}(z) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.1879.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = i\cosh^{-1}(z) + \frac{3\pi}{2} /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1880.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = \frac{\pi}{2}\left(-\sqrt{\frac{1}{z+1}}\sqrt{z+1}+\sqrt{\frac{1}{1-z}}\sqrt{1-z}+1\right)-\frac{\sqrt{1-z}}{\sqrt{z-1}}\cosh^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)$ and $\cosh^{-1}(z)$

01.14.27.1881.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = i\cosh^{-1}(z)+\frac{\pi}{2} \;/;\; 0<\arg(z)\le\frac{\pi}{2} \bigvee (z\in\mathbb{R}\land 0<z<1)$$

01.14.27.1882.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = \frac{\pi}{2}-i\cosh^{-1}(z) \;/;\; -\frac{\pi}{2}<\arg(z)<0$$

01.14.27.1883.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = -i\cosh^{-1}(z)-\frac{\pi}{2} \;/;\; \frac{\pi}{2}<\arg(z)<\pi \bigvee (z\in\mathbb{R}\land z>1) \bigvee (z\in\mathbb{R}\land -1<z<0)$$

01.14.27.1884.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = i\cosh^{-1}(z)-\frac{\pi}{2} \;/;\; -\pi<\arg(z)\le-\frac{\pi}{2}$$

01.14.27.1885.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = -i\cosh^{-1}(z)-\frac{3\pi}{2} \;/;\; (z\in\mathbb{R}\land z<-1)$$

01.14.27.1886.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) = \frac{\pi\sqrt{z^2}}{2z}\left(-\sqrt{\frac{1}{z+1}}\sqrt{z+1}+\sqrt{\frac{1}{1-z}}\sqrt{1-z}+1\right)+\frac{\sqrt{z-1}\,z}{\sqrt{1-z}\sqrt{z^2}}\cosh^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right)$ and $\cosh^{-1}(z)$

01.14.27.1887.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = -i\cosh^{-1}(z) - \frac{\pi}{2} \;/;\; 0 < \arg(z) \le \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1888.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = -\frac{\pi}{2} + i\cosh^{-1}(z) \;/;\; -\frac{\pi}{2} < \arg(z) < 0$$

01.14.27.1889.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = i\cosh^{-1}(z) + \frac{\pi}{2} \;/;\; \frac{\pi}{2} < \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z > 0)$$

01.14.27.1890.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = -i\cosh^{-1}(z) + \frac{\pi}{2} \;/;\; -\pi < \arg(z) \le -\frac{\pi}{2}$$

01.14.27.1891.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = i\cosh^{-1}(z) + \frac{3\pi}{2} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1892.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \frac{\pi z\sqrt{z^2-1}}{2\sqrt{-z^2}\sqrt{1-z^2}}\left(-\sqrt{\frac{1}{z+1}}\sqrt{z+1} + \sqrt{\frac{1}{1-z}}\sqrt{1-z} + 1\right) - \frac{\sqrt{z}\sqrt{z^2-1}}{\sqrt{-z}\sqrt{z-1}\sqrt{z+1}}\cosh^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right)$ and $\cosh^{-1}(z)$

01.14.27.1893.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = i\cosh^{-1}(z) + \frac{\pi}{2} \;/;\; 0 \le \arg(z) \le \frac{\pi}{2}$$

01.14.27.1894.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \frac{\pi}{2} - i\cosh^{-1}(z) \;/;\; -\frac{\pi}{2} < \arg(z) < 0$$

01.14.27.1895.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = -i\cosh^{-1}(z) - \frac{\pi}{2} \;/;\; \frac{\pi}{2} < \arg(z) < \pi \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1896.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = i\cosh^{-1}(z) - \frac{\pi}{2} \;/;\; -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.1897.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = i\cosh^{-1}(z) + \frac{3\pi}{2} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.1898.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) =$$

$$\frac{\pi\sqrt{1-z^2}}{2z}\sqrt{\frac{z^2}{1-z^2}}\left(-\sqrt{\frac{1}{z+1}}\sqrt{z+1} + \sqrt{\frac{1}{1-z}}\sqrt{1-z} + 1\right) + \frac{\sqrt{z-1}\sqrt{z+1}}{z}\sqrt{\frac{z^2}{1-z^2}}\cosh^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right)$ and $\cosh^{-1}(i z)$

01.14.27.0031.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right) = \frac{\sqrt{-z^2-1}}{2\sqrt{z^2+1}}\left(\frac{2i\sqrt{1-iz}}{\sqrt{iz-1}}\cosh^{-1}(iz) - \pi\left(i + \sqrt{-\frac{1}{z^2}}\,z\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right)$ and $\cosh^{-1}(z)$

01.14.27.1899.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = -i\cosh^{-1}(z) \;/;\; 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1) \bigvee (i z \in \mathbb{R} \land i z > 0)$$

01.14.27.1900.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) == i\cosh^{-1}(z) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1901.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) == -i\cosh^{-1}(z) - \pi /; (i\,z \in \mathbb{R} \land i\,z < 0)$$

01.14.27.1902.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) == i\cosh^{-1}(z) + \pi /; \frac{\pi}{2} < \arg(z) \leq \pi$$

01.14.27.1903.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) == -i\cosh^{-1}(z) + \pi /; -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1904.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) == \frac{\pi}{2}\left(\sqrt{\frac{1}{z^2}}\sqrt{z^2} - \frac{\sqrt{z^2}}{z}\right) + \frac{z\sqrt{1-z}}{\sqrt{z^2}\sqrt{z-1}}\cosh^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right)$ and $\cosh^{-1}(z)$

01.14.27.1905.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) == i\cosh^{-1}(z) /; 0 < \arg(z) < \frac{\pi}{2} \bigvee (i\,z \in \mathbb{R} \land i\,z > 0)$$

01.14.27.1906.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) == -i\cosh^{-1}(z) /; -\frac{\pi}{2} < \arg(z) \leq 0$$

01.14.27.1907.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) == i\cosh^{-1}(z) + \pi /; (i\,z \in \mathbb{R} \land i\,z < 0) \lor (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1908.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) == -i\cosh^{-1}(z) - \pi /; \frac{\pi}{2} < \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.1909.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = i\cosh^{-1}(z) - \pi \;/;\; -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1910.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \frac{\pi z \sqrt{z^2-1}}{2\left(\sqrt{-z^2}\sqrt{1-z^2}\right)}\left(\sqrt{\frac{1}{z^2}}\, z - 1\right) + \frac{\sqrt{z}\sqrt{z^2-1}}{\sqrt{z-1}\sqrt{z+1}\sqrt{-z}} \cosh^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right)$ and $\cosh^{-1}(z)$

01.14.27.1911.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = -i\cosh^{-1}(z) \;/;\; 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1912.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = i\cosh^{-1}(z) \;/;\; -\frac{\pi}{2} \leq \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.1913.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = i\cosh^{-1}(z) + \pi \;/;\; \frac{\pi}{2} \leq \arg(z) \leq \pi$$

01.14.27.1914.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = -i\cosh^{-1}(z) + \pi \;/;\; -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1915.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = \frac{\pi}{2}\left(1 - z\sqrt{\frac{1}{z^2}}\right) + \frac{z\sqrt{1-z}}{\sqrt{z-1}}\sqrt{\frac{1}{z^2}}\cosh^{-1}(z)$$

Involving $\tanh^{-1}$

Involving $\tan^{-1}(z)$

Involving $\tan^{-1}(z)$ and $\tanh^{-1}(i z)$

01.14.27.0032.01

$$\tan^{-1}(z) == -i \tanh^{-1}(i z)$$

Involving $\tan^{-1}(z)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.1916.01

$$\tan^{-1}(z) == i \tanh^{-1}\left(\frac{i}{z}\right) + \frac{\pi}{2} \;/;\; \text{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.1917.01

$$\tan^{-1}(z) == i \tanh^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{2} \;/;\; \text{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.1918.01

$$\tan^{-1}(z) == \frac{\pi \sqrt{z^2}}{2 z} + i \tanh^{-1}\left(\frac{i}{z}\right) \;/;\; i z \notin (-1, 1)$$

01.14.27.1919.01

$$\tan^{-1}(z) == \frac{\pi}{2} \operatorname{sgn}(\text{Re}(z)) + i \tanh^{-1}\left(\frac{i}{z}\right) \;/;\; \text{Re}(z) \neq 0$$

01.14.27.1920.01

$$\tan^{-1}(z) == \frac{\pi}{2} \sqrt{\frac{1}{z^2}}\; z \sqrt{\frac{1}{z^2+1}} \sqrt{z^2+1} + i \tanh^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}(i z)$

Involving $\tan^{-1}(i z)$ and $\tanh^{-1}(z)$

01.14.27.0033.01

$$\tan^{-1}(i z) == i \tanh^{-1}(z)$$

Involving $\tan^{-1}(i z)$ and $\tanh^{-1}\left(\frac{1}{z}\right)$

01.14.27.1921.01

$$\tan^{-1}(i z) == i \tanh^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; \text{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1) \lor (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1922.01

$$\tan^{-1}(i z) == i \tanh^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; \text{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1) \lor (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.1923.01

$$\tan^{-1}(i z) == i \tanh^{-1}\left(\frac{1}{z}\right) - \frac{\pi i \sqrt{-z^2}}{2 z} \;/;\; i z \notin (-1, 1)$$

01.14.27.1924.01

$$\tan^{-1}(i z) == i \tanh^{-1}\left(\frac{1}{z}\right) - \frac{1}{2} \pi \operatorname{sgn}(\text{Im}(z)) \;/;\; \text{Im}(z) \neq 0$$

01.14.27.1925.01

$$\tan^{-1}(i z) = \frac{\pi i}{2} \sqrt{-\frac{1}{z^2}} \sqrt{\frac{1}{1-z^2}} \sqrt{1-z^2}\, z + i \tanh^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}(\sqrt{-z})$

Involving $\tan^{-1}(\sqrt{-z})$ and $\tanh^{-1}(\sqrt{z})$

01.14.27.1926.01

$$\tan^{-1}(\sqrt{-z}) = i \tanh^{-1}(\sqrt{z}) \,/;\, -\pi < \arg(z) \leq 0$$

01.14.27.1927.01

$$\tan^{-1}(\sqrt{-z}) = -i \tanh^{-1}(\sqrt{z}) \,/;\, 0 < \arg(z) \leq \pi$$

01.14.27.0034.01

$$\tan^{-1}(\sqrt{-z}) = \frac{\sqrt{-z^2}}{z} \tanh^{-1}(\sqrt{z})$$

Involving $\tan^{-1}(\sqrt{-z})$ and $\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.1928.01

$$\tan^{-1}(\sqrt{-z}) = \frac{\pi}{2} - i \tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\, 0 < \arg(z) \leq \pi$$

01.14.27.1929.01

$$\tan^{-1}(\sqrt{-z}) = \frac{\pi}{2} + i \tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\, \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.1930.01

$$\tan^{-1}(\sqrt{-z}) = -\frac{\pi}{2} + i \tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\, (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1931.01

$$\tan^{-1}(\sqrt{-z}) = \frac{\pi}{2} \sqrt{\frac{z-1}{z}} \sqrt{\frac{z}{z-1}} + \frac{\sqrt{-z}}{\sqrt{z}} \tanh^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}(\sqrt{-z})$ and $\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.1932.01

$$\tan^{-1}(\sqrt{-z}) = \frac{\pi}{2} - i \tanh^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\, \operatorname{Im}(z) > 0$$

01.14.27.1933.01

$$\tan^{-1}\left(\sqrt{-z}\right) = \frac{\pi}{2} + i \tanh^{-1}\left(\sqrt{\frac{1}{z}}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1) \lor (z \in \mathbb{R} \land z < 0)$$

01.14.27.1934.01

$$\tan^{-1}\left(\sqrt{-z}\right) = -\frac{\pi}{2} + i \tanh^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1935.01

$$\tan^{-1}\left(\sqrt{-z}\right) = \frac{\pi}{2} \sqrt{\frac{z-1}{z}} \sqrt{\frac{z}{z-1}} + \sqrt{-z} \sqrt{\frac{1}{z}} \tanh^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{-z}\right)$ and $\tanh^{-1}\left(1 \big/ \sqrt{\frac{1}{z}}\right)$

01.14.27.1936.01

$$\tan^{-1}\left(\sqrt{-z}\right) = i \tanh^{-1}\left(1 \big/ \sqrt{\frac{1}{z}}\right) /; \operatorname{Im}(z) \leq 0$$

01.14.27.1937.01

$$\tan^{-1}\left(\sqrt{-z}\right) = -i \tanh^{-1}\left(1 \big/ \sqrt{\frac{1}{z}}\right) /; \operatorname{Im}(z) > 0$$

01.14.27.1938.01

$$\tan^{-1}\left(\sqrt{-z}\right) = \sqrt{-z} \sqrt{\frac{1}{z}} \tanh^{-1}\left(1 \big/ \sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right)$ and $\tanh^{-1}\left(\sqrt{z}\right)$

01.14.27.1939.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) = \frac{\pi}{2} - i \tanh^{-1}\left(\sqrt{z}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.1940.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) = i \tanh^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2} /; 0 < \arg(z) \leq \pi$$

01.14.27.1941.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) = -\frac{\pi}{2} - i \tanh^{-1}\left(\sqrt{z}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1942.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) = \frac{\sqrt{z}}{\sqrt{-z}} \tanh^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2} \sqrt{\frac{1}{1-z}} \sqrt{1-z} \sqrt{-\frac{1}{z}} \sqrt{-z}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right)$ and $\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.1943.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) = i \tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) /; 0 < \arg(z) \leq \pi$$

01.14.27.1944.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) = -i \tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.1945.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) = -\frac{\sqrt{-z^2}}{z} \tanh^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right)$ and $\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.1946.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) = i \tanh^{-1}\left(\sqrt{\frac{1}{z}}\right) /; \operatorname{Im}(z) > 0$$

01.14.27.1947.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) = -i \tanh^{-1}\left(\sqrt{\frac{1}{z}}\right) /; \operatorname{Im}(z) \leq 0$$

01.14.27.1948.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) = -\sqrt{\frac{1}{z}} \sqrt{-z} \tanh^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right)$ and $\tanh^{-1}\left(1 \Big/ \sqrt{\frac{1}{z}}\right)$

01.14.27.1949.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) = \frac{\pi}{2} - i \tanh^{-1}\left(1 \Big/ \sqrt{\frac{1}{z}}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1) \lor (z \in \mathbb{R} \land z < 0)$$

01.14.27.1950.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) = i \tanh^{-1}\left(1 \Big/ \sqrt{\frac{1}{z}}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) > 0$$

01.14.27.1951.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) = -\frac{\pi}{2} - i\tanh^{-1}\left(1\Big/\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.1952.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) = \frac{\pi}{2}\sqrt{1-z}\sqrt{\frac{1}{1-z}}\sqrt{-z}\sqrt{-\frac{1}{z}} - \sqrt{-z}\sqrt{\frac{1}{z}}\tanh^{-1}\left(1\Big/\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z^2}\right)$

Involving $\tan^{-1}\left(\sqrt{z^2}\right)$ and $\tanh^{-1}(i\,z)$

01.14.27.1953.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = -i\tanh^{-1}(i\,z) /; -\frac{\pi}{2} < \arg(z) \le \frac{\pi}{2}$$

01.14.27.1954.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = i\tanh^{-1}(i\,z) /; \frac{\pi}{2} < \arg(z) \le \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2}$$

01.14.27.1955.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = -\frac{i\sqrt{z^2}}{z}\tanh^{-1}(i\,z)$$

Involving $\tan^{-1}\left(\sqrt{z^2}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.1956.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = \frac{\pi}{2} + i\tanh^{-1}\left(\frac{i}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.1957.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = -i\tanh^{-1}\left(\frac{i}{z}\right) + \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.1958.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = -i\tanh^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{2} /; (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.1959.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = i\tanh^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{2} /; (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.1960.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = \frac{\pi}{2}\sqrt{\frac{z-i}{z+i}}\sqrt{\frac{z+i}{z-i}} + \frac{i\sqrt{z^2}}{z}\tanh^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(a\,(b\,z^c)^m\right)$

Involving $\tan^{-1}(a\,(b\,z^c)^m)$ and $\tanh^{-1}(i\,a\,b^m\,z^{m\,c})$

01.14.27.1961.01

$$\tan^{-1}(a\,(b\,z^c)^m) = -\frac{i\,(b\,z^c)^m}{b^m\,z^{m\,c}}\tanh^{-1}(i\,a\,b^m\,z^{m\,c})\;/;\;2\,m\in\mathbb{Z}$$

Involving $\tan^{-1}\left(\frac{1-z}{1+z}\right)$

Involving $\tan^{-1}\left(\frac{1-z}{1+z}\right)$ and $\tanh^{-1}(i\,z)$

01.14.27.1962.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = \frac{\pi}{4} + i\tanh^{-1}(i\,z)\;/;\;|z|<1 \bigvee -\frac{\pi}{2} < \arg(z) \le \frac{\pi}{2}$$

01.14.27.1963.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = i\tanh^{-1}(i\,z) - \frac{3\,\pi}{4}\;/;\;|z|>1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \le \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.1964.01

$$\tan^{-1}\left(\frac{1-z}{z+1}\right) = -\frac{\pi}{4}\left(-\left(\frac{\sqrt{z^2}}{z}-1\right)\left(\frac{1-z^2}{z}\sqrt{\frac{z^2}{(z^2-1)^2}}+1\right) - 2\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}}+1\right) + i\tanh^{-1}(i\,z)\;/;\;|z|\ne 1$$

Involving $\tan^{-1}\left(\frac{1-z}{1+z}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.1965.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = -i\tanh^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{4}\;/;\;|z|>1 \bigvee -\frac{\pi}{2} \le \arg(z) < \frac{\pi}{2}$$

01.14.27.1966.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = -i\tanh^{-1}\left(\frac{i}{z}\right) + \frac{3\,\pi}{4}\;/;\;|z|<1 \bigwedge \left(\frac{\pi}{2} \le \arg(z) \le \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.1967.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = \frac{1}{4}\,\pi\left(-\left(\sqrt{\frac{1}{z^2}}\,z-1\right)\left(\frac{z^2-1}{z}\sqrt{\frac{z^2}{(z^2-1)^2}}+1\right) - 2\sqrt{\frac{z-i}{z}}\,\sqrt{\frac{z}{z-i}}+1\right) - i\tanh^{-1}\left(\frac{i}{z}\right)\;/;\;|z|\ne 1$$

Involving $\tan^{-1}\left(\frac{z-1}{z+1}\right)$

Involving $\tan^{-1}\left(\frac{z-1}{z+1}\right)$ and $\tanh^{-1}(i\,z)$

01.14.27.1968.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -\frac{\pi}{4} - i\tanh^{-1}(i\,z)\,/;\,|z|<1 \bigvee -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1969.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -i\tanh^{-1}(i\,z) + \frac{3\pi}{4}\,/;\,|z|>1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.1970.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = \frac{\pi}{4}\left(-\left(\frac{\sqrt{z^2}}{z}-1\right)\left(\frac{1-z^2}{z}\sqrt{\frac{z^2}{(z^2-1)^2}}+1\right)-2\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}}+1\right) - i\tanh^{-1}(i\,z)\,/;\,|z|\neq 1$$

Involving $\tan^{-1}\left(\frac{z-1}{z+1}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.1971.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = i\tanh^{-1}\left(\frac{i}{z}\right) + \frac{\pi}{4}\,/;\,|z|>1 \bigvee -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.1972.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = i\tanh^{-1}\left(\frac{i}{z}\right) - \frac{3\pi}{4}\,/;\,|z|<1 \bigwedge \left(\frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.1973.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -\frac{1}{4}\pi\left(-\left(\sqrt{\frac{1}{z^2}}\,z-1\right)\left(\frac{z^2-1}{z}\sqrt{\frac{z^2}{(z^2-1)^2}}+1\right)-2\sqrt{\frac{z-i}{z}}\,\sqrt{\frac{z}{z-i}}+1\right) + i\tanh^{-1}\left(\frac{i}{z}\right)\,/;\,|z|\neq 1$$

Involving $\tan^{-1}\left(\frac{1+z}{1-z}\right)$

Involving $\tan^{-1}\left(\frac{1+z}{1-z}\right)$ and $\tanh^{-1}(i\,z)$

01.14.27.1974.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = \frac{\pi}{4} - i\tanh^{-1}(i\,z)\,/;\,|z|<1 \bigvee \frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.1975.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = -i\tanh^{-1}(i\,z) - \frac{3\pi}{4}\,/;\,|z|>1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1976.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = -\frac{\pi}{4}\left(\left(\frac{\sqrt{z^2}}{z}+1\right)\left(-\frac{1-z^2}{z}\sqrt{\frac{z^2}{(z^2-1)^2}}+1\right)-2\sqrt{1+i\,z}\,\sqrt{\frac{1}{1+i\,z}}+1\right) - i\tanh^{-1}(i\,z)\,/;\,|z|\neq 1$$

Involving $\tan^{-1}\left(\frac{1+z}{1-z}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.1977.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = i\tanh^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{4}\,/;\,|z|>1 \bigvee \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1978.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = i\tanh^{-1}\left(\frac{i}{z}\right) + \frac{3\pi}{4} \;/;\; |z| < 1 \bigwedge -\frac{\pi}{2} \le \arg(z) < \frac{\pi}{2}$$

01.14.27.1979.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = \frac{1}{4}\pi\left(\left(\sqrt{\frac{1}{z^2}}\, z + 1\right)\left(\frac{1-z^2}{z}\sqrt{\frac{z^2}{(1-z^2)^2}} + 1\right) - 2\sqrt{\frac{z+i}{z}}\sqrt{\frac{z}{z+i}} + 1\right) + i\tanh^{-1}\left(\frac{i}{z}\right) \;/;\; |z| \ne 1$$

Involving $\tan^{-1}\left(\frac{z+1}{z-1}\right)$

Involving $\tan^{-1}\left(\frac{z+1}{z-1}\right)$ and $\tanh^{-1}(i\, z)$

01.14.27.1980.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = -\frac{\pi}{4} + i\tanh^{-1}(i\, z) \;/;\; |z| < 1 \bigvee \frac{\pi}{2} < \arg(z) \le \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2}$$

01.14.27.1981.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = i\tanh^{-1}(i\, z) + \frac{3\pi}{4} \;/;\; |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \le \frac{\pi}{2}$$

01.14.27.1982.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = \frac{\pi}{4}\left(\left(\frac{\sqrt{z^2}}{z} + 1\right)\left(-\frac{1-z^2}{z}\sqrt{\frac{z^2}{(z^2-1)^2}} + 1\right) - 2\sqrt{1+i\, z}\sqrt{\frac{1}{1+i\, z}} + 1\right) + i\tanh^{-1}(i\, z) \;/;\; |z| \ne 1$$

Involving $\tan^{-1}\left(\frac{z+1}{z-1}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.1983.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = -i\tanh^{-1}\left(\frac{i}{z}\right) + \frac{\pi}{4} \;/;\; |z| > 1 \bigvee \frac{\pi}{2} \le \arg(z) \le \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.1984.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = -i\tanh^{-1}\left(\frac{i}{z}\right) - \frac{3\pi}{4} \;/;\; |z| < 1 \bigwedge -\frac{\pi}{2} \le \arg(z) < \frac{\pi}{2}$$

01.14.27.1985.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = -\frac{1}{4}\pi\left(\left(\sqrt{\frac{1}{z^2}}\, z + 1\right)\left(-\frac{z^2-1}{z}\sqrt{\frac{z^2}{(z^2-1)^2}} + 1\right) - 2\sqrt{\frac{z+i}{z}}\sqrt{\frac{z}{z+i}} + 1\right) - i\tanh^{-1}\left(\frac{i}{z}\right) \;/;\; |z| \ne 1$$

Involving $\tan^{-1}\left(\frac{2z}{1-z^2}\right)$

Involving $\tan^{-1}\left(\frac{2z}{1-z^2}\right)$ and $\tanh^{-1}(i\, z)$

01.14.27.1986.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = -2i\tanh^{-1}(i\, z) \;/;\; |z| < 1$$

01.14.27.1987.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = -2\,i\tanh^{-1}(i\,z) - \pi\;/;\;|z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1988.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = -2\,i\tanh^{-1}(i\,z) + \pi\;/;\;|z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}\right)$$

01.14.27.1989.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = -2\,i\tanh^{-1}(i\,z) - \frac{\sqrt{z^2}\,\pi}{z}\;/;\;|z| > 1$$

01.14.27.1990.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = \left(\frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2} - 1\right)\frac{\pi\sqrt{z^2}}{2z} - 2\,i\tanh^{-1}(i\,z)\;/;\;|z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2z}{1-z^2}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.1991.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = \pi + 2\,i\tanh^{-1}\left(\frac{i}{z}\right)\;/;\;|z| < 1 \bigwedge -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.1992.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = 2\,i\tanh^{-1}\left(\frac{i}{z}\right) - \pi\;/;\;|z| < 1 \bigwedge \left(\frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.1993.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = z\,\pi\sqrt{\frac{1}{z^2}} + 2\,i\tanh^{-1}\left(\frac{i}{z}\right)\;/;\;|z| < 1$$

01.14.27.1994.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = 2\,i\tanh^{-1}\left(\frac{i}{z}\right)\;/;\;|z| > 1$$

01.14.27.1995.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = \left(1 + \frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\right) z\sqrt{z^{-2}}\,\frac{\pi}{2} + 2\,i\tanh^{-1}\left(\frac{i}{z}\right)\;/;\;|z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2z}{z^2-1}\right)$

Involving $\tan^{-1}\left(\frac{2z}{z^2-1}\right)$ and $\tanh^{-1}(i\,z)$

01.14.27.1996.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = 2\,i\tanh^{-1}(i\,z)\;/;\;|z| < 1$$

01.14.27.1997.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = 2\,i\tanh^{-1}(i\,z)+\pi \;/;\; |z|>1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.1998.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = 2\,i\tanh^{-1}(i\,z)-\pi \;/;\; |z|>1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}\right)$$

01.14.27.1999.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = 2\,i\tanh^{-1}(i\,z)+\frac{\sqrt{z^2}\,\pi}{z} \;/;\; |z|>1$$

01.14.27.2000.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -\left(\frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}-1\right)\frac{\pi\sqrt{z^2}}{2z}+2\,i\tanh^{-1}(i\,z) \;/;\; |z|\neq 1$$

Involving $\tan^{-1}\left(\frac{2z}{z^2-1}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.2001.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -\pi-2\,i\tanh^{-1}\left(\frac{i}{z}\right) \;/;\; |z|<1 \bigwedge -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.2002.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -2\,i\tanh^{-1}\left(\frac{i}{z}\right)+\pi \;/;\; |z|<1 \bigwedge \left(\frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.2003.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -z\,\pi\sqrt{\frac{1}{z^2}}-2\,i\tanh^{-1}\left(\frac{i}{z}\right) \;/;\; |z|<1$$

01.14.27.2004.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -2\,i\tanh^{-1}\left(\frac{i}{z}\right) \;/;\; |z|>1$$

01.14.27.2005.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -\left(1+\frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\right)z\sqrt{z^{-2}}\,\frac{\pi}{2}-2\,i\tanh^{-1}\left(\frac{i}{z}\right) \;/;\; |z|\neq 1$$

Involving $\tan^{-1}\left(\frac{1-z^2}{2z}\right)$

Involving $\tan^{-1}\left(\frac{1-z^2}{2z}\right)$ and $\tanh^{-1}(i\,z)$

01.14.27.2006.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = \frac{\pi}{2}+2\,i\,\tanh^{-1}(i\,z) \;/;\; \mathrm{Re}(z)>0 \lor (i\,z\in\mathbb{R}\land i\,z<-1) \lor (i\,z\in\mathbb{R}\land 0<i\,z<1)$$

01.14.27.2007.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = 2\,i\,\tanh^{-1}(i\,z) - \frac{\pi}{2} \;/;\; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2008.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = z\sqrt{z^{-2}}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\,\frac{\pi}{2} + 2\,i\,\tanh^{-1}(i\,z)$$

Involving $\tan^{-1}\left(\frac{1-z^2}{2z}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.2009.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = -2\,i\,\tanh^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{2} \;/;\; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2010.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = -2\,i\,\tanh^{-1}\left(\frac{i}{z}\right) + \frac{\pi}{2} \;/;\; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2011.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = -2\,i\,\tanh^{-1}\left(\frac{i}{z}\right) - \frac{\pi z}{2}\sqrt{z^{-2}}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}$$

Involving $\tan^{-1}\left(\frac{z^2-1}{2z}\right)$

Involving $\tan^{-1}\left(\frac{z^2-1}{2z}\right)$ and $\tanh^{-1}(i\,z)$

01.14.27.2012.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = -\frac{\pi}{2} - 2\,i\,\tanh^{-1}(i\,z) \;/;\; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2013.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = -2\,i\,\tanh^{-1}(i\,z) + \frac{\pi}{2} \;/;\; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2014.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = -z\sqrt{z^{-2}}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\,\frac{\pi}{2} - 2\,i\,\tanh^{-1}(i\,z)$$

Involving $\tan^{-1}\left(\frac{z^2-1}{2z}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.2015.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = 2\,i\,\tanh^{-1}\left(\frac{i}{z}\right) + \frac{\pi}{2} \;/;\; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2016.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) == 2\,i\tanh^{-1}\left(\frac{i}{z}\right)-\frac{\pi}{2}\ /;\ \mathrm{Re}(z)<0\lor(i\,z\in\mathbb{R}\land i\,z>1)\lor(i\,z\in\mathbb{R}\land -1<i\,z<0)$$

01.14.27.2017.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) == 2\,i\tanh^{-1}\left(\frac{i}{z}\right)+\frac{\pi z}{2}\sqrt{z^{-2}}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}$$

Involving $\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right)$

Involving $\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right)$ and $\tanh^{-1}\left(\sqrt{z}\right)$

01.14.27.2018.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) == 2\,i\tanh^{-1}\left(\sqrt{z}\right)\ /;\ |z|<1\land -\pi<\arg(z)\leq 0$$

01.14.27.2019.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) == -2\,i\tanh^{-1}\left(\sqrt{z}\right)\ /;\ |z|<1\land 0<\arg(z)\leq \pi$$

01.14.27.2020.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) == \frac{2\sqrt{-z}}{\sqrt{z}}\tanh^{-1}\left(\sqrt{z}\right)\ /;\ |z|<1$$

01.14.27.2021.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) == 2\,i\tanh^{-1}\left(\sqrt{z}\right)-\pi\ /;\ |z|>1\land -\pi<\arg(z)\leq 0$$

01.14.27.2022.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) == -2\,i\tanh^{-1}\left(\sqrt{z}\right)-\pi\ /;\ |z|>1\land 0<\arg(z)\leq \pi$$

01.14.27.2023.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) == \frac{2\sqrt{-z}}{\sqrt{z}}\tanh^{-1}\left(\sqrt{z}\right)-\pi\ /;\ |z|>1$$

01.14.27.2024.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) == \frac{2\sqrt{-z}}{\sqrt{z}}\tanh^{-1}\left(\sqrt{z}\right)-\frac{\pi}{2}\left(1-\frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\right)\ /;\ |z|\neq 1$$

Involving $\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right)$ and $\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.2025.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) == \pi - 2\,i\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ |z| < 1 \bigwedge 0 < \arg(z) \leq \pi$$

01.14.27.2026.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) == \pi + 2\,i\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ |z| < 1 \land \operatorname{Im}(z) < 0$$

01.14.27.2027.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) == -\pi + 2\,i\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2028.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) == \frac{2\sqrt{-z}}{\sqrt{z}}\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) + \sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}}\,\pi /;\ |z| < 1$$

01.14.27.2029.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) == 2\,i\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ |z| > 1 \bigwedge -\pi < \arg(z) \leq 0$$

01.14.27.2030.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) == -2\,i\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ |z| > 1 \bigwedge 0 < \arg(z) \leq \pi$$

01.14.27.2031.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) == \frac{2\sqrt{-z}}{\sqrt{z}}\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ |z| > 1$$

01.14.27.2032.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) == \frac{\pi}{2}\left(\frac{1+z}{1-z}\sqrt{\left(\frac{z-1}{z+1}\right)^2} + 2\sqrt{\frac{z}{z-1}}\sqrt{\frac{z-1}{z}} - 1\right) + \frac{2\sqrt{-z}}{\sqrt{z}}\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right)$ and $\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.2033.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) == \pi - 2\,i\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\ |z| < 1 \bigwedge 0 < \arg(z) < \pi$$

01.14.27.2034.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) == \pi + 2\,i\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\ |z| < 1 \land (\operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z < 0))$$

01.14.27.2035.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) == -\pi + 2\,i\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\ (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2036.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = 2\sqrt{\frac{1}{z}}\sqrt{-z}\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right) + \sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}}\,\pi\;/;\;|z|<1$$

01.14.27.2037.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = 2\,i\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right)\;/;\;|z|>1\land -\pi<\arg(z)\le 0$$

01.14.27.2038.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = -2\,i\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right)\;/;\;|z|>1\land 0<\arg(z)<\pi$$

01.14.27.2039.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = 2\sqrt{-z}\sqrt{\frac{1}{z}}\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right)\;/;\;|z|>1$$

01.14.27.2040.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) = \frac{\pi}{2}\left(\frac{1+z}{1-z}\sqrt{\left(\frac{z-1}{z+1}\right)^2} + 2\sqrt{\frac{z}{z-1}}\sqrt{\frac{z-1}{z}} - 1\right) + 2\sqrt{-z}\sqrt{\frac{1}{z}}\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right)\;/;\;|z|\ne 1$$

Involving $\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right)$

Involving $\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right)$ and $\tanh^{-1}\left(\sqrt{z}\right)$

01.14.27.2041.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = 2\,i\tanh^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2}\;/;\;0<\arg(z)\le\pi$$

01.14.27.2042.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = \frac{\pi}{2} - 2\,i\tanh^{-1}\left(\sqrt{z}\right)\;/;\;\operatorname{Im}(z)<0\lor(z\in\mathbb{R}\land z>1)$$

01.14.27.2043.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = -2\,i\tanh^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2}\;/;\;(z\in\mathbb{R}\land 0<z<1)$$

01.14.27.2044.01

$$\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) = \frac{\pi}{2}\sqrt{\frac{z}{z-1}}\sqrt{\frac{z-1}{z}} - \frac{2\sqrt{-z}}{\sqrt{z}}\tanh^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right)$ and $\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.2045.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = 2\,i\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2}\;/;\;0<\arg(z)\le\pi$$

01.14.27.2046.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = -2\,i\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2} \;/;\; \mathrm{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2047.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = -2\,i\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2048.01

$$\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) = -\frac{2\sqrt{-z}}{\sqrt{z}}\tanh^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2}\sqrt{\frac{z}{z-1}}\sqrt{\frac{z-1}{z}}$$

Involving $\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right)$ and $\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.2049.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = 2\,i\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} \;/;\; 0 < \arg(z) < \pi$$

01.14.27.2050.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = -2\,i\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} \;/;\; \mathrm{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1) \lor (z \in \mathbb{R} \land z < 0)$$

01.14.27.2051.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = -2\,i\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2052.01

$$\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) = -2\sqrt{-z}\sqrt{\frac{1}{z}}\tanh^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2}\sqrt{\frac{z}{z-1}}\sqrt{\frac{z-1}{z}}$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}+c\,z\right)$

Involving $\tan^{-1}\left(\sqrt{1+z^2}+z\right)$ and $\tanh^{-1}(i\,z)$

01.14.27.2053.01

$$\tan^{-1}\left(\sqrt{1+z^2}+z\right) = -\frac{i}{2}\tanh^{-1}(i\,z) + \frac{\pi}{4}$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}+z\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.2054.01

$$\tan^{-1}\left(z+\sqrt{z^2+1}\right) = \frac{1}{2}\,i\tanh^{-1}\left(\frac{i}{z}\right) + \frac{\pi}{2} \;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2055.01

$$\tan^{-1}\left(z+\sqrt{z^2+1}\right) = \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right) /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.2056.01

$$\tan^{-1}\left(z+\sqrt{z^2+1}\right) = \left(1 + z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right)\frac{\pi}{4} + \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}-z\right)$ and $\tanh^{-1}(i z)$

01.14.27.2057.01

$$\tan^{-1}\left(\sqrt{1+z^2}-z\right) = \frac{\pi}{4} + \frac{i}{2}\tanh^{-1}(i z)$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}-z\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.2058.01

$$\tan^{-1}\left(\sqrt{z^2+1}-z\right) = -\frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.2059.01

$$\tan^{-1}\left(\sqrt{z^2+1}-z\right) = \frac{\pi}{2} - \frac{1}{2} i \tanh^{-1}\left(\frac{i}{z}\right) /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.2060.01

$$\tan^{-1}\left(\sqrt{1+z^2}-z\right) = \left(1 - z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right)\frac{\pi}{4} - \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}+c z}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}+z}\right)$ and $\tanh^{-1}(i z)$

01.14.27.2061.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right) = \frac{\pi}{4} + \frac{i}{2}\tanh^{-1}(i z)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}+z}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.2062.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right) = -\frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2063.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right) = -\frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right) + \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2064.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right) = \left(1 - z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right)\frac{\pi}{4} - \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}-z}\right)$ and $\tanh^{-1}(i\,z)$

01.14.27.2065.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2+1}-z}\right) = -\frac{i}{2}\tanh^{-1}(i\,z) + \frac{\pi}{4}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}-z}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.2066.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2+1}-z}\right) = \frac{\pi}{2} + \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2067.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2+1}-z}\right) = \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right) /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2068.01

$$\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}-z}\right) = \left(1 + z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right)\frac{\pi}{4} + \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}+a}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right)$ and $\tanh^{-1}(i\,z)$

01.14.27.2069.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) = \frac{\pi}{2} + \frac{i}{2}\tanh^{-1}(i z) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.2070.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) = \frac{i}{2}\tanh^{-1}(i z) - \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.2071.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) = z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\,\frac{\pi}{2} + \frac{i}{2}\tanh^{-1}(i z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.2072.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right) = \frac{\pi}{4} - \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.2073.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right) = -\frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{4} /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.2074.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right) = \frac{\pi z}{4}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2}} - \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right)$ and $\tanh^{-1}(i z)$

01.14.27.2075.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}-1}{z}\right) = -\frac{i}{2}\tanh^{-1}(i z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.2076.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right) = \frac{\pi}{4} + \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.2077.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right) = \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{4} \;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2078.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right) = \frac{\pi\,z}{4}\sqrt{\frac{1}{z^2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}} + \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+a}\right)$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right)$ and $\tanh^{-1}(i\,z)$

01.14.27.2079.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right) = -\frac{i}{2}\tanh^{-1}(i\,z)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.2080.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}+1}\right) = \frac{\pi}{4} + \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right) \;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2081.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}+1}\right) = \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{4} \;/;\; \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2082.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right) = \frac{\pi\,z}{4}\sqrt{\frac{1}{z^2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}} + \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right)$ and $\tanh^{-1}(i\,z)$

01.14.27.2083.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = \frac{\pi}{2} + \frac{i}{2}\tanh^{-1}(i\,z) \;/;\; \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2084.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = \frac{i}{2}\tanh^{-1}(i\,z) - \frac{\pi}{2} \,/;\, \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2085.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right) = z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\frac{\pi}{2} + \frac{i}{2}\tanh^{-1}(i\,z)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right)$ and $\tanh^{-1}\left(\frac{i}{z}\right)$

01.14.27.2086.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = \frac{\pi}{4} - \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right) \,/;\, \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2087.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = -\frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{4} \,/;\, \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2088.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right) = \frac{\pi z}{4}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2}} - \frac{i}{2}\tanh^{-1}\left(\frac{i}{z}\right)$$

Involving $\coth^{-1}$

Involving $\tan^{-1}(z)$

Involving $\tan^{-1}(z)$ and $\coth^{-1}(i\,z)$

01.14.27.2089.01

$$\tan^{-1}(z) = \frac{\pi}{2} - i\coth^{-1}(i\,z) \,/;\, \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2090.01

$$\tan^{-1}(z) = -i\coth^{-1}(i\,z) - \frac{\pi}{2} \,/;\, \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0037.01

$$\tan^{-1}(z) = \frac{\pi\sqrt{z^2}}{2\,z} - i\coth^{-1}(i\,z) \,/;\, i\,z \notin (-1,\,1)$$

01.14.27.2091.01

$$\tan^{-1}(z) = \frac{\pi}{2}\operatorname{sgn}(\mathrm{Re}(z)) - i\coth^{-1}(i\,z) \,/;\, \mathrm{Re}(z) \neq 0$$

01.14.27.2092.01

$$\tan^{-1}(z) = \frac{\pi}{2}\sqrt{\frac{1}{z^2}}\, z\sqrt{\frac{1}{z^2+1}}\,\sqrt{z^2+1} - i\coth^{-1}(i\,z)$$

Involving $\tan^{-1}(z)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.0035.02

$$\tan^{-1}(z) = i\coth^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}(i\,z)$

Involving $\tan^{-1}(i\,z)$ and $\coth^{-1}(z)$

01.14.27.2093.01

$$\tan^{-1}(i\,z) = i\coth^{-1}(z) - \frac{\pi}{2} \;/;\; \mathrm{Im}(z) > 0 \lor (z \in \mathbb{R} \land 0 < z < 1) \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2094.01

$$\tan^{-1}(i\,z) = i\coth^{-1}(z) + \frac{\pi}{2} \;/;\; \mathrm{Im}(z) < 0 \lor (z \in \mathbb{R} \land -1 < z < 0) \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2095.01

$$\tan^{-1}(i\,z) = i\coth^{-1}(z) - \frac{\pi\,i\sqrt{-z^2}}{2\,z} \;/;\; z \notin (-1, 1)$$

01.14.27.2096.01

$$\tan^{-1}(i\,z) = i\coth^{-1}(z) - \frac{1}{2}\pi\,\mathrm{sgn}(\mathrm{Im}(z)) \;/;\; \mathrm{Im}(z) \neq 0$$

01.14.27.2097.01

$$\tan^{-1}(i\,z) = i\coth^{-1}(z) - \frac{\pi\,i}{2\,z}\sqrt{-z^2}\,\sqrt{\frac{z^2}{z^2-1}}\,\sqrt{\frac{z^2-1}{z^2}}$$

Involving $\tan^{-1}(i\,z)$ and $\coth^{-1}\left(\frac{1}{z}\right)$

01.14.27.2098.01

$$\tan^{-1}(i\,z) = i\coth^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{-z}\right)$

Involving $\tan^{-1}\left(\sqrt{-z}\right)$ and $\coth^{-1}\left(\sqrt{z}\right)$

01.14.27.2099.01

$$\tan^{-1}\left(\sqrt{-z}\right) = \frac{\pi}{2} - i \coth^{-1}\left(\sqrt{z}\right) /; 0 < \arg(z) \leq \pi$$

01.14.27.2100.01

$$\tan^{-1}\left(\sqrt{-z}\right) = i \coth^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2} /; -\pi < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.2101.01

$$\tan^{-1}\left(\sqrt{-z}\right) = i \coth^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2102.01

$$\tan^{-1}\left(\sqrt{-z}\right) = \frac{\sqrt{-z}}{\sqrt{z}} \coth^{-1}\left(\sqrt{z}\right) + \frac{1}{2} \pi \sqrt{\frac{z}{z-1}} \sqrt{\frac{z-1}{z}}$$

Involving $\tan^{-1}\left(\sqrt{-z}\right)$ and $\coth^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.2103.01

$$\tan^{-1}\left(\sqrt{-z}\right) = i \coth^{-1}\left(\frac{1}{\sqrt{z}}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.2104.01

$$\tan^{-1}\left(\sqrt{-z}\right) = -i \coth^{-1}\left(\frac{1}{\sqrt{z}}\right) /; 0 < \arg(z) \leq \pi$$

01.14.27.2105.01

$$\tan^{-1}\left(\sqrt{-z}\right) = \frac{\sqrt{-z^2}}{z} \coth^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{-z}\right)$ and $\coth^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.2106.01

$$\tan^{-1}\left(\sqrt{-z}\right) = i \coth^{-1}\left(\sqrt{\frac{1}{z}}\right) /; \operatorname{Im}(z) \leq 0$$

01.14.27.2107.01

$$\tan^{-1}\left(\sqrt{-z}\right) = -i \coth^{-1}\left(\sqrt{\frac{1}{z}}\right) /; \operatorname{Im}(z) > 0$$

01.14.27.2108.01

$$\tan^{-1}\left(\sqrt{-z}\right) = \sqrt{-z} \sqrt{\frac{1}{z}} \coth^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{-z}\right)$ and $\coth^{-1}\left(1 \Big/ \sqrt{\frac{1}{z}}\right)$

01.14.27.2109.01

$$\tan^{-1}\left(\sqrt{-z}\right) == \frac{\pi}{2} - i \coth^{-1}\left(1 \Big/ \sqrt{\frac{1}{z}}\right) /; \operatorname{Im}(z) > 0$$

01.14.27.2110.01

$$\tan^{-1}\left(\sqrt{-z}\right) == \frac{\pi}{2} + i \coth^{-1}\left(1 \Big/ \sqrt{\frac{1}{z}}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1) \lor (z \in \mathbb{R} \land z < 0)$$

01.14.27.2111.01

$$\tan^{-1}\left(\sqrt{-z}\right) == -\frac{\pi}{2} + i \coth^{-1}\left(1 \Big/ \sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2112.01

$$\tan^{-1}\left(\sqrt{-z}\right) == \frac{\pi}{2} \sqrt{\frac{z-1}{z}} \sqrt{\frac{z}{z-1}} + \sqrt{-z} \sqrt{\frac{1}{z}} \coth^{-1}\left(1 \Big/ \sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right)$ and $\coth^{-1}\left(\sqrt{z}\right)$

01.14.27.2113.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) == i \coth^{-1}\left(\sqrt{z}\right) /; 0 < \arg(z) \leq \pi$$

01.14.27.2114.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) == -i \coth^{-1}\left(\sqrt{z}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.2115.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) == -\frac{\sqrt{-z^2}}{z} \coth^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right)$ and $\coth^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.2116.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) == \frac{\pi}{2} - i \coth^{-1}\left(\frac{1}{\sqrt{z}}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2117.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) == i \coth^{-1}\left(\frac{1}{\sqrt{z}}\right) + \frac{\pi}{2} /; 0 < \arg(z) \leq \pi$$

01.14.27.2118.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) == -\frac{\pi}{2} - i \coth^{-1}\left(\frac{1}{\sqrt{z}}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2119.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) == \frac{\sqrt{z}}{\sqrt{-z}} \coth^{-1}\left(\frac{1}{\sqrt{z}}\right) + \frac{\pi}{2}\sqrt{\frac{1}{1-z}}\,\sqrt{1-z}\,\sqrt{-\frac{1}{z}}\,\sqrt{-z}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right)$ and $\coth^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.2120.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) == i\coth^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2} \;/;\; \operatorname{Im}(z) > 0$$

01.14.27.2121.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) == \frac{\pi}{2} - i\coth^{-1}\left(\sqrt{\frac{1}{z}}\right) \;/;\; -\pi < \arg(z) < 0 \lor (z \in \mathbb{R} \land z > 1) \lor (z \in \mathbb{R} \land z < 0)$$

01.14.27.2122.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) == -i\coth^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2123.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) == \frac{\pi}{2}\sqrt{\frac{z-1}{z}}\,\sqrt{\frac{z}{z-1}} - \sqrt{-z}\,\sqrt{\frac{1}{z}}\coth^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right)$ and $\coth^{-1}\left(1\middle/\sqrt{\frac{1}{z}}\right)$

01.14.27.2124.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) == i\coth^{-1}\left(1\middle/\sqrt{\frac{1}{z}}\right) \;/;\; \operatorname{Im}(z) > 0$$

01.14.27.2125.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) == -i\coth^{-1}\left(1\middle/\sqrt{\frac{1}{z}}\right) \;/;\; \operatorname{Im}(z) \le 0$$

01.14.27.2126.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z}}\right) == -\sqrt{-z}\,\sqrt{\frac{1}{z}}\coth^{-1}\left(1\middle/\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z^2}\right)$

Involving $\tan^{-1}\left(\sqrt{z^2}\right)$ and $\coth^{-1}(i z)$

01.14.27.2127.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = \frac{\pi}{2} - i \coth^{-1}(i z) \;/;\; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.2128.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = i \coth^{-1}(i z) + \frac{\pi}{2} \;/;\; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.2129.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = i \coth^{-1}(i z) - \frac{\pi}{2} \;/;\; (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.2130.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = -i \coth^{-1}(i z) - \frac{\pi}{2} \;/;\; (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.2131.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = \frac{\pi}{2} \sqrt{\frac{z-i}{z+i}} \sqrt{\frac{z+i}{z-i}} - \frac{i \sqrt{z^2}}{z} \coth^{-1}(i z)$$

Involving $\tan^{-1}\left(\sqrt{z^2}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2132.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = i \coth^{-1}\left(\frac{i}{z}\right) \;/;\; -\frac{\pi}{2} < \arg(z) \le \frac{\pi}{2}$$

01.14.27.2133.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = -i \coth^{-1}\left(\frac{i}{z}\right) \;/;\; \frac{\pi}{2} < \arg(z) \le \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2}$$

01.14.27.2134.01

$$\tan^{-1}\left(\sqrt{z^2}\right) = \frac{i \sqrt{z^2}}{z} \coth^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(a \left(b z^c\right)^m\right)$

Involving $\tan^{-1}(a (b z^c)^m)$ and $\coth^{-1}\left(\frac{i}{a} b^{-m} z^{-m c}\right)$

01.14.27.2135.01

$$\tan^{-1}(a (b z^c)^m) = \frac{i (b z^c)^m}{b^m z^{m c}} \coth^{-1}\left(\frac{i}{a} b^{-m} z^{-m c}\right) \;/;\; 2 m \in \mathbb{Z}$$

Involving $\tan^{-1}\left(\frac{1-z}{1+z}\right)$

Involving $\tan^{-1}\left(\frac{1-z}{1+z}\right)$ and $\coth^{-1}(i z)$

01.14.27.2136.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = i\coth^{-1}(i\,z) - \frac{\pi}{4} \;/;\; |z| > 1 \bigvee -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.2137.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = i\coth^{-1}(i\,z) + \frac{3\pi}{4} \;/;\; |z| < 1 \bigwedge \left(\frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.2138.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = \frac{1}{4}\pi\left(-\left(\sqrt{\frac{1}{z^2}}\,z-1\right)\left(\frac{z^2-1}{z}\sqrt{\frac{z^2}{\left(z^2-1\right)^2}}+1\right)-2\sqrt{\frac{z-i}{z}}\sqrt{\frac{z}{z-i}}+1\right)+i\coth^{-1}(i\,z) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1-z}{1+z}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2139.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = \frac{\pi}{4} - i\coth^{-1}\left(\frac{i}{z}\right) \;/;\; |z| < 1 \bigvee -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.2140.01

$$\tan^{-1}\left(\frac{1-z}{1+z}\right) = -i\coth^{-1}\left(\frac{i}{z}\right) - \frac{3\pi}{4} \;/;\; |z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.2141.01

$$\tan^{-1}\left(\frac{1-z}{z+1}\right) = -\frac{\pi}{4}\left(-\left(\frac{\sqrt{z^2}}{z}-1\right)\left(\frac{1-z^2}{z}\sqrt{\frac{z^2}{\left(z^2-1\right)^2}}+1\right)-2\sqrt{1-i\,z}\sqrt{\frac{1}{1-i\,z}}+1\right)-i\coth^{-1}\left(\frac{i}{z}\right) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{z-1}{z+1}\right)$

Involving $\tan^{-1}\left(\frac{z-1}{z+1}\right)$ and $\coth^{-1}(i\,z)$

01.14.27.2142.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -i\coth^{-1}(i\,z) + \frac{\pi}{4} \;/;\; |z| > 1 \bigvee -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.2143.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -i\coth^{-1}(i\,z) - \frac{3\pi}{4} \;/;\; |z| < 1 \bigwedge \left(\frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.2144.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -\frac{1}{4}\pi\left(-\left(\sqrt{\frac{1}{z^2}}\,z-1\right)\left(\frac{z^2-1}{z}\sqrt{\frac{z^2}{\left(z^2-1\right)^2}}+1\right)-2\sqrt{\frac{z-i}{z}}\sqrt{\frac{z}{z-i}}+1\right)-i\coth^{-1}(i\,z) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{z-1}{z+1}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2145.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = -\frac{\pi}{4} + i\coth^{-1}\left(\frac{i}{z}\right) \;/;\; |z| < 1 \bigvee -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.2146.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = i\coth^{-1}\left(\frac{i}{z}\right) + \frac{3\pi}{4} \;/;\; |z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.2147.01

$$\tan^{-1}\left(\frac{z-1}{z+1}\right) = \frac{\pi}{4}\left(-\left(\frac{\sqrt{z^2}}{z} - 1\right)\left(\frac{1-z^2}{z}\sqrt{\frac{z^2}{(z^2-1)^2}} + 1\right) - 2\sqrt{1-iz}\sqrt{\frac{1}{1-iz}} + 1\right) + i\coth^{-1}\left(\frac{i}{z}\right) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1+z}{1-z}\right)$

Involving $\tan^{-1}\left(\frac{1+z}{1-z}\right)$ and $\coth^{-1}(i z)$

01.14.27.2148.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = -i\coth^{-1}(iz) - \frac{\pi}{4} \;/;\; |z| > 1 \bigvee |z| < 1 \bigwedge \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee |z| < 1 \bigwedge -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.2149.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = -i\coth^{-1}(iz) + \frac{3\pi}{4} \;/;\; |z| < 1 \bigwedge -\frac{\pi}{2} \leq \arg(z) < -\frac{\pi}{2}$$

01.14.27.2150.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = \frac{\pi}{4}\left(\left(\sqrt{\frac{1}{z^2}}\, z + 1\right)\left(1 - \frac{z^2-1}{z}\sqrt{\frac{z^2}{(z^2-1)^2}}\right) - 2\sqrt{\frac{z+i}{z}}\sqrt{\frac{z}{z+i}} + 1\right) - i\coth^{-1}(iz) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1+z}{1-z}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2151.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = i\coth^{-1}\left(\frac{i}{z}\right) + \frac{\pi}{4} \;/;\; |z| < 1 \bigvee |z| > 1 \bigwedge \frac{\pi}{2} < \arg(z) \leq \pi \bigvee |z| > 1 \bigwedge -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.2152.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = i\coth^{-1}\left(\frac{i}{z}\right) - \frac{3\pi}{4} \;/;\; |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.2153.01

$$\tan^{-1}\left(\frac{1+z}{1-z}\right) = i\coth^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{4}\left(\left(\frac{\sqrt{z^2}}{z} + 1\right)\left(1 - \frac{1-z^2}{z}\sqrt{\frac{z^2}{(z^2-1)^2}}\right) - 2\sqrt{iz+1}\sqrt{\frac{1}{iz+1}} + 1\right) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{z+1}{z-1}\right)$

Involving $\tan^{-1}\left(\frac{z+1}{z-1}\right)$ and $\coth^{-1}(i z)$

01.14.27.2154.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = i\coth^{-1}(iz) + \frac{\pi}{4} \;/;\; |z| > 1 \bigvee |z| < 1 \bigwedge \frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee |z| < 1 \bigwedge -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.2155.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = i\coth^{-1}(i\,z) - \frac{3\pi}{4} \;/;\; |z| < 1 \bigwedge -\frac{\pi}{2} \leq \arg(z) < -\frac{\pi}{2}$$

01.14.27.2156.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = -\frac{\pi}{4}\left(\left(\sqrt{\frac{1}{z^2}}\;z+1\right)\left(1-\frac{z^2-1}{z}\sqrt{\frac{z^2}{\left(z^2-1\right)^2}}\right)-2\sqrt{\frac{z+i}{z}}\;\sqrt{\frac{z}{z+i}}\;+1\right)+i\coth^{-1}(i\,z) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{z+1}{z-1}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2157.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = -i\coth^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{4} \;/;\; |z| < 1 \bigvee |z| > 1 \bigwedge \frac{\pi}{2} < \arg(z) \leq \pi \bigvee |z| > 1 \bigwedge -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.2158.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = -i\coth^{-1}\left(\frac{i}{z}\right) + \frac{3\pi}{4} \;/;\; |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.2159.01

$$\tan^{-1}\left(\frac{z+1}{z-1}\right) = -i\coth^{-1}\left(\frac{i}{z}\right) + \frac{\pi}{4}\left(\left(\frac{\sqrt{z^2}}{z}+1\right)\left(1-\frac{1-z^2}{z}\sqrt{\frac{z^2}{\left(z^2-1\right)^2}}\right)-2\sqrt{i\,z+1}\;\sqrt{\frac{1}{i\,z+1}}\;+1\right) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2z}{1-z^2}\right)$

Involving $\tan^{-1}\left(\frac{2z}{1-z^2}\right)$ and $\coth^{-1}(i\,z)$

01.14.27.2160.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = \pi - 2\,i\coth^{-1}(i\,z) \;/;\; |z| < 1 \bigwedge -\frac{\pi}{2} \leq \arg(z) < \frac{\pi}{2}$$

01.14.27.2161.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = -2\,i\coth^{-1}(i\,z) - \pi \;/;\; |z| < 1 \bigwedge \left(\frac{\pi}{2} \leq \arg(z) \leq \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.2162.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = z\,\pi\sqrt{\frac{1}{z^2}} - 2\,i\coth^{-1}(i\,z) \;/;\; |z| < 1$$

01.14.27.2163.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = -2\,i\coth^{-1}(i\,z) \;/;\; |z| > 1$$

01.14.27.2164.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = \left(1+\frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\right)z\sqrt{z^{-2}}\;\frac{\pi}{2} - 2\,i\coth^{-1}(i\,z) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2z}{1-z^2}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2165.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = 2\,i\coth^{-1}\left(\frac{i}{z}\right) /; |z| < 1$$

01.14.27.2166.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = 2\,i\coth^{-1}\left(\frac{i}{z}\right) - \pi /; |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \le \frac{\pi}{2}$$

01.14.27.2167.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = 2\,i\coth^{-1}\left(\frac{i}{z}\right) + \pi /; |z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \le \pi \bigvee -\pi < \arg(z) \le -\frac{\pi}{2}\right)$$

01.14.27.2168.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = 2\,i\coth^{-1}\left(\frac{i}{z}\right) - \frac{\sqrt{z^2}\,\pi}{z} /; |z| > 1$$

01.14.27.2169.01

$$\tan^{-1}\left(\frac{2z}{1-z^2}\right) = \left(\frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2} - 1\right)\frac{\pi\sqrt{z^2}}{2z} + 2\,i\coth^{-1}\left(\frac{i}{z}\right) /; |z| \ne 1$$

Involving $\tan^{-1}\left(\frac{2z}{z^2-1}\right)$

Involving $\tan^{-1}\left(\frac{2z}{z^2-1}\right)$ and $\coth^{-1}(i\,z)$

01.14.27.2170.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -\pi + 2\,i\coth^{-1}(i\,z) /; |z| < 1 \bigwedge -\frac{\pi}{2} \le \arg(z) < \frac{\pi}{2}$$

01.14.27.2171.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = 2\,i\coth^{-1}(i\,z) + \pi /; |z| < 1 \bigwedge \left(\frac{\pi}{2} \le \arg(z) \le \pi \bigvee -\pi < \arg(z) < -\frac{\pi}{2}\right)$$

01.14.27.2172.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -z\,\pi\sqrt{\frac{1}{z^2}} + 2\,i\coth^{-1}(i\,z) /; |z| < 1$$

01.14.27.2173.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = 2\,i\coth^{-1}(i\,z) /; |z| > 1$$

01.14.27.2174.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -\left(1 + \frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2}\right) z\sqrt{z^{-2}}\,\frac{\pi}{2} + 2\,i\coth^{-1}(i\,z) /; |z| \ne 1$$

Involving $\tan^{-1}\left(\frac{2z}{z^2-1}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2175.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -2\,i\coth^{-1}\left(\frac{i}{z}\right) /; |z| < 1$$

01.14.27.2176.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -2\,i\coth^{-1}\left(\frac{i}{z}\right) + \pi /; |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.2177.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -2\,i\coth^{-1}\left(\frac{i}{z}\right) - \pi /; |z| > 1 \bigwedge \left(\frac{\pi}{2} < \arg(z) \leq \pi \bigvee -\pi < \arg(z) \leq -\frac{\pi}{2}\right)$$

01.14.27.2178.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -2\,i\coth^{-1}\left(\frac{i}{z}\right) + \frac{\sqrt{z^2}\,\pi}{z} /; |z| > 1$$

01.14.27.2179.01

$$\tan^{-1}\left(\frac{2z}{z^2-1}\right) = -\left(\frac{(1-z)}{1+z}\sqrt{\left(\frac{1+z}{-1+z}\right)^2} - 1\right)\frac{\pi\sqrt{z^2}}{2z} - 2\,i\coth^{-1}\left(\frac{i}{z}\right) /; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1-z^2}{2z}\right)$

Involving $\tan^{-1}\left(\frac{1-z^2}{2z}\right)$ and $\coth^{-1}(i\,z)$

01.14.27.2180.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = 2\,i\coth^{-1}(i\,z) - \frac{\pi}{2} /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2181.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = 2\,i\coth^{-1}(i\,z) + \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.0036.02

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = 2\,i\coth^{-1}(i\,z) - \frac{\pi z}{2}\sqrt{z^{-2}}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}$$

Involving $\tan^{-1}\left(\frac{1-z^2}{2z}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2182.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = \frac{\pi}{2} - 2\,i\,\coth^{-1}\left(\frac{i}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2183.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = -2\,i\,\coth^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{2} \text{ /; } \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2184.01

$$\tan^{-1}\left(\frac{1-z^2}{2z}\right) = z\sqrt{z^{-2}}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\,\frac{\pi}{2} - 2\,i\,\coth^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z^2-1}{2z}\right)$

Involving $\tan^{-1}\left(\frac{z^2-1}{2z}\right)$ and $\coth^{-1}(i\,z)$

01.14.27.2185.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = -2\,i\coth^{-1}(i\,z) + \frac{\pi}{2} \text{ /; } \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2186.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = -2\,i\coth^{-1}(i\,z) - \frac{\pi}{2} \text{ /; } \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2187.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = -2\,i\coth^{-1}(i\,z) + \frac{\pi z}{2}\sqrt{z^{-2}}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}$$

Involving $\tan^{-1}\left(\frac{z^2-1}{2z}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2188.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = -\frac{\pi}{2} + 2\,i\,\coth^{-1}\left(\frac{i}{z}\right) \text{ /; } \mathrm{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2189.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = 2\,i\,\coth^{-1}\left(\frac{i}{z}\right) + \frac{\pi}{2} \text{ /; } \mathrm{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2190.01

$$\tan^{-1}\left(\frac{z^2-1}{2z}\right) = -z\sqrt{z^{-2}}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\,\frac{\pi}{2} + 2\,i\,\coth^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right)$

Involving $\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right)$ and $\coth^{-1}\left(\sqrt{z}\right)$

01.14.27.2191.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) = \pi - 2\,i\coth^{-1}\left(\sqrt{z}\right) /;\ |z| < 1 \bigwedge 0 < \arg(z) \leq \pi$$

01.14.27.2192.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) = \pi + 2\,i\coth^{-1}\left(\sqrt{z}\right) /;\ |z| < 1 \wedge \operatorname{Im}(z) < 0$$

01.14.27.2193.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) = -\pi + 2\,i\coth^{-1}\left(\sqrt{z}\right) /;\ (z \in \mathbb{R} \wedge 0 < z < 1)$$

01.14.27.2194.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = \frac{2\sqrt{-z}}{\sqrt{z}}\coth^{-1}\left(\sqrt{z}\right) + \sqrt{\frac{z-1}{z}}\sqrt{\frac{z}{z-1}}\,\pi /;\ |z| < 1$$

01.14.27.2195.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = 2\,i\coth^{-1}\left(\sqrt{z}\right) /;\ |z| > 1 \bigwedge -\pi < \arg(z) \leq 0$$

01.14.27.2196.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = -2\,i\coth^{-1}\left(\sqrt{z}\right) /;\ |z| > 1 \bigwedge 0 < \arg(z) \leq \pi$$

01.14.27.2197.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = \frac{2\sqrt{-z}}{\sqrt{z}}\coth^{-1}\left(\sqrt{z}\right) /;\ |z| > 1$$

01.14.27.2198.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) = \frac{\pi}{2}\left(\frac{1+z}{1-z}\sqrt{\left(\frac{z-1}{z+1}\right)^2} + 2\sqrt{\frac{z}{z-1}}\sqrt{\frac{z-1}{z}} - 1\right) + \frac{2\sqrt{-z}}{\sqrt{z}}\coth^{-1}\left(\sqrt{z}\right) /;\ |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right)$ and $\coth^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.2199.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = 2\,i\coth^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ |z| < 1 \bigwedge -\pi < \arg(z) \leq 0$$

01.14.27.2200.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = -2\,i\coth^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ |z| < 1 \bigwedge 0 < \arg(z) \leq \pi$$

01.14.27.2201.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = \frac{2\sqrt{-z}}{\sqrt{z}}\coth^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ |z| < 1$$

01.14.27.2202.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = 2\,i\coth^{-1}\left(\frac{1}{\sqrt{z}}\right) - \pi \;/;\; |z| > 1 \bigwedge -\pi < \arg(z) \leq 0$$

01.14.27.2203.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = -2\,i\coth^{-1}\left(\frac{1}{\sqrt{z}}\right) - \pi \;/;\; |z| > 1 \bigwedge 0 < \arg(z) \leq \pi$$

01.14.27.2204.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = \frac{2\sqrt{-z}}{\sqrt{z}}\coth^{-1}\left(\frac{1}{\sqrt{z}}\right) - \pi \;/;\; |z| > 1$$

01.14.27.2205.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) = \frac{2\sqrt{-z}}{\sqrt{z}}\coth^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2}\left(1 - \frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\right) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right)$ and $\coth^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.2206.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = 2\,i\coth^{-1}\left(\sqrt{\frac{1}{z}}\right) \;/;\; |z| < 1 \land \operatorname{Im}(z) \leq 0$$

01.14.27.2207.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = -2\,i\coth^{-1}\left(\sqrt{\frac{1}{z}}\right) \;/;\; |z| < 1 \land \operatorname{Im}(z) > 0$$

01.14.27.2208.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = 2\sqrt{\frac{1}{z}}\sqrt{-z}\coth^{-1}\left(\sqrt{\frac{1}{z}}\right) \;/;\; |z| < 1$$

01.14.27.2209.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = 2\,i\coth^{-1}\left(\sqrt{\frac{1}{z}}\right) - \pi \;/;\; |z| > 1 \land \operatorname{Im}(z) \leq 0$$

01.14.27.2210.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = -2\,i\coth^{-1}\left(\sqrt{\frac{1}{z}}\right) - \pi \;/;\; |z| > 1 \land \operatorname{Im}(z) > 0$$

01.14.27.2211.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{z+1}\right) = 2\sqrt{\frac{1}{z}}\sqrt{-z}\coth^{-1}\left(\sqrt{\frac{1}{z}}\right) - \pi \;/;\; |z| > 1$$

01.14.27.2212.01

$$\tan^{-1}\left(\frac{2\sqrt{-z}}{1+z}\right) = 2\sqrt{-z}\sqrt{\frac{1}{z}}\coth^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2}\left(1 - \frac{1+z}{1-z}\sqrt{\left(\frac{1-z}{1+z}\right)^2}\right) \;/;\; |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right)$

Involving $\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right)$ and $\coth^{-1}\left(\sqrt{z}\right)$

01.14.27.2213.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = 2\,i\coth^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} \;/;\; 0 < \arg(z) \le \pi$$

01.14.27.2214.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = -2\,i\coth^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} \;/;\; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2215.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = -2\,i\coth^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2216.01

$$\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) = -\frac{2\sqrt{-z}}{\sqrt{z}}\coth^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2}\sqrt{\frac{z}{z-1}}\,\sqrt{\frac{z-1}{z}}$$

Involving $\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right)$ and $\coth^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.2217.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = 2\,i\coth^{-1}\left(\frac{1}{\sqrt{z}}\right) + \frac{\pi}{2} \;/;\; 0 < \arg(z) \le \pi$$

01.14.27.2218.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = \frac{\pi}{2} - 2\,i\coth^{-1}\left(\frac{1}{\sqrt{z}}\right) \;/;\; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2219.01

$$\tan^{-1}\left(\frac{z+1}{2\sqrt{-z}}\right) = -2\,i\coth^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2220.01

$$\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) = \frac{\pi}{2}\sqrt{\frac{z}{z-1}}\,\sqrt{\frac{z-1}{z}} - \frac{2\sqrt{-z}}{\sqrt{z}}\coth^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right)$ and $\coth^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.2221.01

$$\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) = \frac{\pi}{2} + 2\,i\coth^{-1}\left(\sqrt{\frac{1}{z}}\right) \;/;\; \operatorname{Im}(z) > 0$$

01.14.27.2222.01

$$\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) = \frac{\pi}{2} - 2\,i\coth^{-1}\left(\sqrt{\frac{1}{z}}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z < 0) \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2223.01

$$\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) = -\frac{\pi}{2} - 2\,i\coth^{-1}\left(\sqrt{\frac{1}{z}}\right) /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2224.01

$$\tan^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) = \frac{\pi}{2}\sqrt{\frac{z}{z-1}}\sqrt{\frac{z-1}{z}} - 2\sqrt{-z}\sqrt{\frac{1}{z}}\coth^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}+c\,z\right)$

Involving $\tan^{-1}\left(\sqrt{1+z^2}+z\right)$ and $\coth^{-1}(i\,z)$

01.14.27.2225.01

$$\tan^{-1}\left(z+\sqrt{z^2+1}\right) = \frac{\pi}{2} - \frac{i}{2}\coth^{-1}(i\,z) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2226.01

$$\tan^{-1}\left(z+\sqrt{z^2+1}\right) = -\frac{i}{2}\coth^{-1}(i\,z) /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2227.01

$$\tan^{-1}\left(z+\sqrt{z^2+1}\right) = \left(1 + z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right)\frac{\pi}{4} - \frac{i}{2}\coth^{-1}(i\,z)$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}+z\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2228.01

$$\tan^{-1}\left(\sqrt{1+z^2}+z\right) = \frac{i}{2}\coth^{-1}\left(\frac{i}{z}\right) + \frac{\pi}{4}$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}-z\right)$ and $\coth^{-1}(i\,z)$

01.14.27.2229.01

$$\tan^{-1}\left(\sqrt{z^2+1}-z\right) = \frac{i}{2}\coth^{-1}(i\,z) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2230.01

$$\tan^{-1}\left(\sqrt{z^2+1}-z\right) = \frac{1}{2}\,i\coth^{-1}(i\,z) + \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2231.01

$$\tan^{-1}\left(\sqrt{1+z^2}-z\right)=\left(1-z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right)\frac{\pi}{4}+\frac{i}{2}\coth^{-1}(i\,z)$$

Involving $\tan^{-1}\left(\sqrt{1+z^2}-z\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2232.01

$$\tan^{-1}\left(\sqrt{1+z^2}-z\right)=\frac{\pi}{4}-\frac{i}{2}\coth^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}+c\,z}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}+z}\right)$ and $\coth^{-1}(i\,z)$

01.14.27.2233.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right)=\frac{i}{2}\coth^{-1}(i\,z)\;/;\;\mathrm{Re}(z)>0\lor(i\,z\in\mathbb{R}\land i\,z<-1)\lor(i\,z\in\mathbb{R}\land 0<i\,z<1)$$

01.14.27.2234.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right)=\frac{i}{2}\coth^{-1}(i\,z)+\frac{\pi}{2}\;/;\;\mathrm{Re}(z)<0\lor(i\,z\in\mathbb{R}\land i\,z>1)\lor(i\,z\in\mathbb{R}\land -1<i\,z<0)$$

01.14.27.2235.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right)=\left(1-z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right)\frac{\pi}{4}+\frac{i}{2}\coth^{-1}(i\,z)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}+z}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2236.01

$$\tan^{-1}\left(\frac{1}{z+\sqrt{z^2+1}}\right)=\frac{\pi}{4}-\frac{i}{2}\coth^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}-z}\right)$ and $\coth^{-1}(i\,z)$

01.14.27.2237.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2+1}-z}\right)=\frac{\pi}{2}-\frac{i}{2}\coth^{-1}(i\,z)\,/;\,\mathrm{Re}(z)>0\lor(i\,z\in\mathbb{R}\land i\,z<-1)\lor(i\,z\in\mathbb{R}\land 0<i\,z<1)$$

01.14.27.2238.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2+1}-z}\right)=-\frac{i}{2}\coth^{-1}(i\,z)\,/;\,\mathrm{Re}(z)<0\lor(i\,z\in\mathbb{R}\land i\,z>1)\lor(i\,z\in\mathbb{R}\land -1<i\,z<0)$$

01.14.27.2239.01

$$\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}-z}\right)=\left(1+z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\right)\frac{\pi}{4}-\frac{i}{2}\coth^{-1}(i\,z)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{1+z^2}-z}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2240.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2+1}-z}\right)=\frac{i}{2}\coth^{-1}\left(\frac{i}{z}\right)+\frac{\pi}{4}$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}+a}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right)$ and $\coth^{-1}(i\,z)$

01.14.27.2241.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right)=\frac{\pi}{4}+\frac{i}{2}\coth^{-1}(i\,z)\,/;\,\mathrm{Re}(z)>0\lor(i\,z\in\mathbb{R}\land i\,z<-1)\lor(i\,z\in\mathbb{R}\land 0<i\,z<1)$$

01.14.27.2242.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right)=\frac{i}{2}\coth^{-1}(i\,z)-\frac{\pi}{4}\,/;\,\mathrm{Re}(z)<0\lor(i\,z\in\mathbb{R}\land i\,z>1)\lor(i\,z\in\mathbb{R}\land -1<i\,z<0)$$

01.14.27.2243.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right)=\frac{\pi\,z}{4}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2}}+\frac{i}{2}\coth^{-1}(i\,z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}+1}{z}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2244.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) = \frac{\pi}{2} - \frac{i}{2}\coth^{-1}\left(\frac{i}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2245.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) = -\frac{i}{2}\coth^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2246.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}+1}{z}\right) = z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\frac{\pi}{2} - \frac{i}{2}\coth^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right)$ and $\coth^{-1}(i\,z)$

01.14.27.2247.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right) = \frac{\pi}{4} - \frac{i}{2}\coth^{-1}(i\,z) /; \operatorname{Re}(z) > 0 \lor (i\,z \in \mathbb{R} \land i\,z < -1) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2248.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right) = -\frac{i}{2}\coth^{-1}(i\,z) - \frac{\pi}{4} /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2249.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right) = \frac{\pi\,z}{4}\sqrt{\frac{1}{z^2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}} - \frac{i}{2}\coth^{-1}(i\,z)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}-1}{z}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2250.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}-1}{z}\right) = \frac{i}{2}\coth^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+a}\right)$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right)$ and $\coth^{-1}(i\,z)$

01.14.27.2251.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}+1}\right) = \frac{\pi}{4} - \frac{i}{2}\coth^{-1}(i z) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.2252.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}+1}\right) = -\frac{i}{2}\coth^{-1}(i z) - \frac{\pi}{4} /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.2253.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right) = \frac{\pi z}{4}\sqrt{\frac{1}{z^2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}} - \frac{i}{2}\coth^{-1}(i z)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2254.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}+1}\right) = \frac{i}{2}\coth^{-1}\left(\frac{i}{z}\right)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right)$ and $\coth^{-1}(i z)$

01.14.27.2255.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = \frac{\pi}{4} + \frac{i}{2}\coth^{-1}(i z) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.2256.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = \frac{i}{2}\coth^{-1}(i z) - \frac{\pi}{4} /; \operatorname{Re}(z) < 0 \lor (i z \in \mathbb{R} \land i z > 1) \lor (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.2257.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right) = \frac{\pi z}{4}\sqrt{\frac{1}{z^2+1}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2}} + \frac{i}{2}\coth^{-1}(i z)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right)$ and $\coth^{-1}\left(\frac{i}{z}\right)$

01.14.27.2258.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = \frac{\pi}{2} - \frac{i}{2}\coth^{-1}\left(\frac{i}{z}\right) /; \operatorname{Re}(z) > 0 \lor (i z \in \mathbb{R} \land i z < -1) \lor (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.2259.01

$$\tan^{-1}\left(\frac{z}{\sqrt{z^2+1}-1}\right) = -\frac{i}{2}\coth^{-1}\left(\frac{i}{z}\right) - \frac{\pi}{2} /; \operatorname{Re}(z) < 0 \lor (i\,z \in \mathbb{R} \land i\,z > 1) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2260.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1+z^2}-1}\right) = z\sqrt{z^{-2}}\sqrt{z^2+1}\sqrt{\frac{1}{z^2+1}}\frac{\pi}{2} - \frac{i}{2}\coth^{-1}\left(\frac{i}{z}\right)$$

Involving csch^{-1}

Involving $\tan^{-1}(z)$

Involving $\tan^{-1}(z)$ and $\operatorname{csch}^{-1}\left(\sqrt{-z^2-1}\right)$

01.14.27.2261.01

$$\tan^{-1}(z) = i\operatorname{csch}^{-1}\left(\sqrt{-z^2-1}\right) + \frac{\pi}{2} /; 0 < \arg(z) < \frac{\pi}{2} \bigvee (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.2262.01

$$\tan^{-1}(z) = \frac{\pi}{2} - i\operatorname{csch}^{-1}\left(\sqrt{-z^2-1}\right) /; -\frac{\pi}{2} < \arg(z) \le 0 \bigvee (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2263.01

$$\tan^{-1}(z) = i\operatorname{csch}^{-1}\left(\sqrt{-z^2-1}\right) - \frac{\pi}{2} /; \frac{\pi}{2} < \arg(z) \le \pi \bigvee (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2264.01

$$\tan^{-1}(z) = -i\operatorname{csch}^{-1}\left(\sqrt{-z^2-1}\right) - \frac{\pi}{2} /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.0038.01

$$\tan^{-1}(z) = \frac{\sqrt{z^2}\sqrt{z^2+1}}{z\sqrt{-z^2-1}}\operatorname{csch}^{-1}\left(\sqrt{-z^2-1}\right) + \frac{\pi\sqrt{z^2}}{2\,z}$$

Involving $\tan^{-1}(z)$ and $\operatorname{csch}^{-1}\left(\frac{\sqrt{-1-z^2}}{z}\right)$

01.14.27.2265.01

$$\tan^{-1}(z) = i\operatorname{csch}^{-1}\left(\frac{\sqrt{-1-z^2}}{z}\right) /; \frac{\pi}{2} < \arg(z) \le \pi \bigvee -\frac{\pi}{2} < \arg(z) \le 0 \bigvee (i\,z \in \mathbb{R} \land -1 < i\,z < 1)$$

01.14.27.2266.01

$$\tan^{-1}(z) = -i\operatorname{csch}^{-1}\left(\frac{\sqrt{-1-z^2}}{z}\right) /; 0 < \arg(z) < \frac{\pi}{2} \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.2267.01

$$\tan^{-1}(z) = i \operatorname{csch}^{-1}\left(\frac{\sqrt{-1-z^2}}{z}\right) - \pi \;/;\; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.2268.01

$$\tan^{-1}(z) = i \operatorname{csch}^{-1}\left(\frac{\sqrt{-1-z^2}}{z}\right) + \pi \;/;\; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.2269.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i z}\sqrt{\frac{1}{1-i z}} - \sqrt{i z+1}\sqrt{\frac{1}{i z+1}}\right) + \sqrt{-z^2-1}\sqrt{\frac{1}{z^2+1}} \operatorname{csch}^{-1}\left(\frac{\sqrt{-1-z^2}}{z}\right)$$

Involving $\tan^{-1}(z)$ and $\operatorname{csch}^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right)$

01.14.27.2270.01

$$\tan^{-1}(z) = i \operatorname{csch}^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right) \;/;\; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) \le \pi \bigvee (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.2271.01

$$\tan^{-1}(z) = -i \operatorname{csch}^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right) \;/;\; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) \le 0 \bigvee (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.2272.01

$$\tan^{-1}(z) = i \operatorname{csch}^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right) - \pi \;/;\; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.2273.01

$$\tan^{-1}(z) = -i \operatorname{csch}^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right) + \pi \;/;\; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.2274.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i z}\sqrt{\frac{1}{1-i z}} - \sqrt{i z+1}\sqrt{\frac{1}{i z+1}}\right) + \frac{\sqrt{z^2}\,(z^2+1)}{z\sqrt{-z^2}}\sqrt{\frac{z^2}{(z^2+1)^2}} \operatorname{csch}^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right)$$

Involving $\tan^{-1}(z)$ and $\operatorname{csch}^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{z^2}}\right)$

01.14.27.2275.01

$$\tan^{-1}(z) = -i \operatorname{csch}^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{z^2}}\right) \;/;\; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) \le \pi \bigvee (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.2276.01

$$\tan^{-1}(z) = i \operatorname{csch}^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{z^2}}\right) /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.2277.01

$$\tan^{-1}(z) = -i \operatorname{csch}^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{z^2}}\right) - \pi /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.2278.01

$$\tan^{-1}(z) = i \operatorname{csch}^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{z^2}}\right) + \pi /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.2279.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i z} \sqrt{\frac{1}{1-i z}} - \sqrt{i z+1} \sqrt{\frac{1}{i z+1}}\right) + \frac{\sqrt{-\left(z^2+1\right)^2}}{z} \sqrt{\frac{z^2}{\left(z^2+1\right)^2}} \operatorname{csch}^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{z^2}}\right)$$

Involving $\tan^{-1}(z)$ and $\operatorname{csch}^{-1}\left(\sqrt{-\frac{z^2+1}{z^2}}\right)$

01.14.27.2280.01

$$\tan^{-1}(z) = i \operatorname{csch}^{-1}\left(\sqrt{-\frac{z^2+1}{z^2}}\right) /; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) < \pi \bigvee (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.2281.01

$$\tan^{-1}(z) = -i \operatorname{csch}^{-1}\left(\sqrt{-\frac{z^2+1}{z^2}}\right) /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) < 0 \bigvee (i z \in \mathbb{R} \land 0 < i z < 1) \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.2282.01

$$\tan^{-1}(z) = -i \operatorname{csch}^{-1}\left(\sqrt{-\frac{z^2+1}{z^2}}\right) + \pi /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.2283.01

$$\tan^{-1}(z) = i \operatorname{csch}^{-1}\left(\sqrt{-\frac{z^2+1}{z^2}}\right) - \pi /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.2284.01

$$\tan^{-1}(z) = \frac{\pi}{2}\left(\sqrt{1-i z} \sqrt{\frac{1}{1-i z}} - \sqrt{i z+1} \sqrt{\frac{1}{i z+1}}\right) + z \sqrt{-\frac{1}{z^2}} \sqrt{\frac{1}{z^2+1}} \sqrt{z^2+1} \operatorname{csch}^{-1}\left(\sqrt{-\frac{z^2+1}{z^2}}\right)$$

Involving $\tan^{-1}(z)$ and $\operatorname{csch}^{-1}\left(\sqrt{2}\,(1+z^2)^{1/4}\Big/\sqrt{1-\sqrt{1+z^2}}\right)$

01.14.27.2285.01

$$\tan^{-1}(z) = 2\,i\,\operatorname{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{1-\sqrt{1+z^2}}}\right) /;\ 0 < \arg(z) \le \pi$$

01.14.27.2286.01

$$\tan^{-1}(z) = -2\,i\,\operatorname{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{1-\sqrt{1+z^2}}}\right) /;\ -\pi < \arg(z) \le 0$$

01.14.27.2287.01

$$\tan^{-1}(z) = -\frac{2\sqrt{-z^2}}{z}\operatorname{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{1-\sqrt{1+z^2}}}\right)$$

Involving $\tan^{-1}(z)$ and $\operatorname{csch}^{-1}\left(\sqrt{2\sqrt{1+z^2}\Big/\left(1-\sqrt{1+z^2}\right)}\right)$

01.14.27.2288.01

$$\tan^{-1}(z) = 2\,i\,\operatorname{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{1-\sqrt{1+z^2}}}\right) /;\ 0 \le \arg(z) < \pi$$

01.14.27.2289.01

$$\tan^{-1}(z) = -2\,i\,\operatorname{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{1-\sqrt{1+z^2}}}\right) /;\ -\pi < \arg(z) < 0 \lor (z \in \mathbb{R} \land z < 0)$$

01.14.27.2290.01

$$\tan^{-1}(z) = 2\,z\sqrt{-\frac{1}{z^2}}\operatorname{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{1-\sqrt{1+z^2}}}\right)$$

Involving $\tan^{-1}(z)$ and $\operatorname{csch}^{-1}\left(\sqrt{2}\,(1+z^2)^{1/4}\Big/\sqrt{z-\sqrt{1+z^2}}\right)$

01.14.27.2291.01

$$\tan^{-1}(z) == 2\,i\,\text{csch}^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{z^2+1}}{\sqrt{1-\sqrt{z^2+1}}}\right)\text{/; }0<\arg(z)\leq\pi$$

01.14.27.2292.01

$$\tan^{-1}(z) == -2\,i\,\text{csch}^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{z^2+1}}{\sqrt{1-\sqrt{z^2+1}}}\right)\text{/; }-\pi<\arg(z)\leq 0$$

01.14.27.2293.01

$$\tan^{-1}(z) == -\frac{2\sqrt{-z^2}}{z}\,\text{csch}^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{z^2+1}}{\sqrt{1-\sqrt{z^2+1}}}\right)$$

Involving $\tan^{-1}(z)$ and $\text{csch}^{-1}\left(\sqrt{2\sqrt{1+z^2}\Big/\left(z-\sqrt{1+z^2}\right)}\right)$

01.14.27.2294.01

$$\tan^{-1}(z) == 2\,i\,\text{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{z-\sqrt{1+z^2}}}\right)+\frac{\pi}{2}\text{/; Im}(z)>0$$

01.14.27.2295.01

$$\tan^{-1}(z) == \frac{\pi}{2}-2\,i\,\text{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{z-\sqrt{1+z^2}}}\right)\text{/;}$$

$$-\pi<\arg(z)<-\frac{\pi}{2}\bigvee-\frac{\pi}{2}<\arg(z)\leq 0\bigvee(i\,z\in\mathbb{R}\land 0<i\,z<1)\bigvee(z\in\mathbb{R}\land z<0)$$

01.14.27.2296.01

$$\tan^{-1}(z) == 2\,i\,\text{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{z-\sqrt{1+z^2}}}\right)-\frac{3\pi}{2}\text{/; }(i\,z\in\mathbb{R}\land i\,z>1)$$

01.14.27.2297.01

$$\tan^{-1}(z) == \left(\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}}-\frac{1}{2}\right)\pi-2\sqrt{\frac{1}{z}}\,\sqrt{-z}\,\sqrt{1-i\,z}\,\sqrt{\frac{1}{1-i\,z}}\,\text{csch}^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{z-\sqrt{z^2+1}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$

Involving $\tan^{-1}(\sqrt{z})$ and $\operatorname{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right)$

01.14.27.2298.01

$$\tan^{-1}(\sqrt{z}) = \frac{1}{2} i \operatorname{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) /; |z| < 1 \bigwedge 0 < \arg(z) \leq \pi$$

01.14.27.2299.01

$$\tan^{-1}(\sqrt{z}) = -\frac{1}{2} i \operatorname{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) /; |z| < 1 \bigwedge -\pi < \arg(z) \leq 0$$

01.14.27.2300.01

$$\tan^{-1}(\sqrt{z}) = \frac{\sqrt{z}}{2\sqrt{-z}} \operatorname{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) /; |z| < 1$$

01.14.27.2301.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} - \frac{1}{2} i \operatorname{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) /; |z| > 1 \bigwedge 0 < \arg(z) \leq \pi$$

01.14.27.2302.01

$$\tan^{-1}(\sqrt{z}) = \frac{1}{2} i \operatorname{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) + \frac{\pi}{2} /; |z| > 1 \bigwedge -\pi < \arg(z) \leq 0$$

01.14.27.2303.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} - \frac{\sqrt{z}}{2\sqrt{-z}} \operatorname{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) /; |z| > 1$$

01.14.27.2304.01

$$\tan^{-1}(\sqrt{z}) = \frac{1}{4}\left(1 - \frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\right)\pi - \frac{\sqrt{-z}\,(1-z)}{2\sqrt{z}\,(1+z)}\sqrt{\left(\frac{z+1}{z-1}\right)^2} \operatorname{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) /; |z| \neq 1$$

Involving $\tan^{-1}(\sqrt{z})$ and $\operatorname{csch}^{-1}(\sqrt{-z-1})$

01.14.27.2305.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} + i \operatorname{csch}^{-1}(\sqrt{-z-1}) /; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2306.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} - i \operatorname{csch}^{-1}(\sqrt{-z-1}) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > -1)$$

01.14.27.2307.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} - \frac{\sqrt{-z-1}}{\sqrt{z+1}} \operatorname{csch}^{-1}(\sqrt{-z-1})$$

Involving $\tan^{-1}(\sqrt{z})$ and $\operatorname{csch}^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{-z}}\right)$

01.14.27.2308.01

$$\tan^{-1}(\sqrt{z}) = -i\,\mathrm{csch}^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{-z}}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.2309.01

$$\tan^{-1}(\sqrt{z}) = i\,\mathrm{csch}^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{-z}}\right) /; \mathrm{Im}(z) > 0 \lor (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2310.01

$$\tan^{-1}(\sqrt{z}) = \pi - i\,\mathrm{csch}^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{-z}}\right) /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.2311.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2}\left(1 - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right) + \frac{\sqrt{z}\,\sqrt{z+1}}{\sqrt{-z}}\,\sqrt{\frac{1}{z+1}}\,\mathrm{csch}^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{-z}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\mathrm{csch}^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{z}}\right)$

01.14.27.2312.01

$$\tan^{-1}(\sqrt{z}) = -i\,\mathrm{csch}^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{z}}\right) /; \mathrm{Im}(z) > 0$$

01.14.27.2313.01

$$\tan^{-1}(\sqrt{z}) = i\,\mathrm{csch}^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{z}}\right) /; \mathrm{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > -1)$$

01.14.27.2314.01

$$\tan^{-1}(\sqrt{z}) = i\,\mathrm{csch}^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{z}}\right) + \pi /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.2315.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2}\left(1 - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right) + \sqrt{-z-1}\,\sqrt{\frac{1}{z+1}}\,\mathrm{csch}^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{z}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\mathrm{csch}^{-1}\left(\sqrt{-\frac{z+1}{z}}\right)$

01.14.27.2316.01

$$\tan^{-1}(\sqrt{z}) = i\,\mathrm{csch}^{-1}\left(\sqrt{-\frac{z+1}{z}}\right) /; 0 \leq \arg(z) < \pi \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2317.01

$$\tan^{-1}(\sqrt{z}) = -i\,\mathrm{csch}^{-1}\left(\sqrt{-\frac{z+1}{z}}\right) /; \mathrm{Im}(z) < 0$$

01.14.27.2318.01

$$\tan^{-1}\left(\sqrt{z}\right) = -i \operatorname{csch}^{-1}\left(\sqrt{-\frac{z+1}{z}}\right) + \pi \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.2319.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2}\left(1 - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right) + \frac{\sqrt{-z-1}\, z^{3/2}}{\sqrt{-z(z+1)}}\sqrt{-\frac{1}{z^2}}\, \operatorname{csch}^{-1}\left(\sqrt{-\frac{z+1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\operatorname{csch}^{-1}\left(\sqrt{2}\,(1+z)^{1/4} \Big/ \sqrt{1-\sqrt{1+z}}\right)$

01.14.27.2320.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\, i \operatorname{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{1-\sqrt{1+z}}}\right) \;/;\; 0 < \arg(z) \le \pi$$

01.14.27.2321.01

$$\tan^{-1}\left(\sqrt{z}\right) = -2\, i \operatorname{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{1-\sqrt{1+z}}}\right) \;/;\; -\pi < \arg(z) \le 0$$

01.14.27.2322.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\frac{2\sqrt{-z^2}}{z} \operatorname{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{1-\sqrt{1+z}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\operatorname{csch}^{-1}\left(\sqrt{2\sqrt{1+z} \Big/ \left(1-\sqrt{1+z}\right)}\right)$

01.14.27.2323.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\, i \operatorname{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{1-\sqrt{1+z}}}\right) \;/;\; \operatorname{Im}(z) \ge 0$$

01.14.27.2324.01

$$\tan^{-1}\left(\sqrt{z}\right) = -2\, i \operatorname{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{1-\sqrt{1+z}}}\right) \;/;\; \operatorname{Im}(z) < 0$$

01.14.27.2325.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\sqrt{z}\,\sqrt{-\frac{1}{z}}\, \operatorname{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{1-\sqrt{1+z}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\operatorname{csch}^{-1}\left(\sqrt{2}\,(1+z)^{1/4} \Big/ \sqrt{\sqrt{z}-\sqrt{1+z}}\right)$

01.14.27.2326.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} + 2\,i\,\mathrm{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{z}-\sqrt{1+z}}}\right) /;\ \mathrm{Im}(z) \geq 0$$

01.14.27.2327.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - 2\,i\,\mathrm{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{z}-\sqrt{1+z}}}\right) /;\ \mathrm{Im}(z) < 0$$

01.14.27.2328.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\mathrm{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{z}-\sqrt{1+z}}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\mathrm{csch}^{-1}\left(\sqrt{2\sqrt{1+z}\,/\left(\sqrt{z}-\sqrt{1+z}\right)}\right)$

01.14.27.2329.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} + 2\,i\,\mathrm{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{z}-\sqrt{1+z}}}\right) /;\ 0 < \arg(z) \leq \pi$$

01.14.27.2330.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{\pi}{2} - 2\,i\,\mathrm{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{z}-\sqrt{1+z}}}\right) /;\ -\pi < \arg(z) \leq 0$$

01.14.27.2331.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{2\sqrt{z}}{\sqrt{-z}}\,\mathrm{csch}^{-1}\left(\sqrt{\frac{2\sqrt{z+1}}{\sqrt{z}-\sqrt{z+1}}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\mathrm{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right)$

01.14.27.2332.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - \frac{1}{2}\,i\,\mathrm{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) /;\ |z| < 1 \land \mathrm{Im}(z) > 0$$

01.14.27.2333.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\,i\,\mathrm{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) + \frac{\pi}{2} /;\ |z| < 1 \bigwedge -\pi < \arg(z) \leq 0$$

01.14.27.2334.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{i}{2}\,\mathrm{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) - \frac{\pi}{2} /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2335.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\sqrt{-z}}{2\sqrt{z}}\operatorname{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right) + \frac{1}{2}\pi\sqrt{\frac{1}{z}}\sqrt{z}\ /;\ |z| < 1$$

01.14.27.2336.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{\sqrt{-z}}{2\sqrt{z}}\operatorname{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right)\ /;\ |z| > 1$$

01.14.27.2337.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4}\left(-\frac{z-1}{z+1}\sqrt{\left(\frac{z+1}{z-1}\right)^2} + 2\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 1\right) + \frac{\sqrt{-z}\,(1-z)}{2\sqrt{z}\,(z+1)}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\operatorname{csch}^{-1}\left(\frac{1+z}{2\sqrt{-z}}\right)\ /;\ |z| \neq 1$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{csch}^{-1}\left(\sqrt{-1-z}\right)$

01.14.27.2338.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i\operatorname{csch}^{-1}\left(\sqrt{-z-1}\right)\ /;\ 0 < \arg(z) < \pi \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2339.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i\operatorname{csch}^{-1}\left(\sqrt{-z-1}\right)\ /;\ -\pi < \arg(z) \leq 0$$

01.14.27.2340.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i\operatorname{csch}^{-1}\left(\sqrt{-z-1}\right) - \pi\ /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2341.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 1\right) + \frac{\sqrt{-z-1}}{\sqrt{z+1}}\operatorname{csch}^{-1}\left(\sqrt{-z-1}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{csch}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{-z}}\right)$

01.14.27.2342.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - i\operatorname{csch}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{-z}}\right)\ /;\ \operatorname{Im}(z) > 0$$

01.14.27.2343.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} + i\operatorname{csch}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{-z}}\right)\ /;\ \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 0)$$

01.14.27.2344.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i\operatorname{csch}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{-z}}\right) - \frac{\pi}{2}\ /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2345.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i \operatorname{csch}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{-z}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.2346.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\sqrt{z}\sqrt{\frac{1}{z}}\,\pi + \frac{\sqrt{-\frac{z}{1+z}}}{\sqrt{\frac{z}{1+z}}}\operatorname{csch}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{-z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{csch}^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z}}\right)$

01.14.27.2347.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} + i \operatorname{csch}^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z}}\right) \;/;\; 0 < \arg(z) < \pi$$

01.14.27.2348.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - i \operatorname{csch}^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z}}\right) \;/;\; -\pi < \arg(z) \leq 0$$

01.14.27.2349.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i \operatorname{csch}^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < 0)$$

01.14.27.2350.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\sqrt{z}\sqrt{\frac{1}{z}}\,\pi - \sqrt{-z-1}\sqrt{\frac{1}{z+1}}\operatorname{csch}^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{csch}^{-1}\left(\sqrt{-\frac{z+1}{z}}\right)$

01.14.27.2351.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - i \operatorname{csch}^{-1}\left(\sqrt{-\frac{z+1}{z}}\right) \;/;\; 0 \leq \arg(z) < \pi$$

01.14.27.2352.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i \operatorname{csch}^{-1}\left(\sqrt{-\frac{z+1}{z}}\right) + \frac{\pi}{2} \;/;\; \operatorname{Im}(z) < 0$$

01.14.27.2353.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i \operatorname{csch}^{-1}\left(\sqrt{-\frac{z+1}{z}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2354.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i \operatorname{csch}^{-1}\left(\sqrt{-\frac{z+1}{z}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.2355.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\sqrt{z}\sqrt{\frac{1}{z}}\,\pi - \sqrt{z}\sqrt{\frac{1}{z+1}}\sqrt{-\frac{z+1}{z}}\,\operatorname{csch}^{-1}\left(\sqrt{-\frac{z+1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{csch}^{-1}\left(\sqrt{2}\,(1+z)^{1/4}\big/\sqrt{1-\sqrt{1+z}}\right)$

01.14.27.2356.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - 2\,i\operatorname{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{1-\sqrt{1+z}}}\right) /; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2357.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} + 2\,i\operatorname{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{1-\sqrt{1+z}}}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 0)$$

01.14.27.2358.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\operatorname{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{1-\sqrt{1+z}}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2359.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{2\sqrt{-z}}{\sqrt{z}}\operatorname{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{1-\sqrt{1+z}}}\right) + \frac{1}{2}\pi\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{csch}^{-1}\left(\sqrt{2\sqrt{1+z}\big/\left(1-\sqrt{1+z}\right)}\right)$

01.14.27.2360.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - 2\,i\operatorname{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{1-\sqrt{1+z}}}\right) /; 0 \le \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.2361.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\operatorname{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{1-\sqrt{1+z}}}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) < 0$$

01.14.27.2362.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\operatorname{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{1-\sqrt{1+z}}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2363.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\sqrt{z}\sqrt{-\frac{1}{z}}\operatorname{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{1-\sqrt{1+z}}}\right) + \frac{1}{2}\pi\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{csch}^{-1}\left(\sqrt{2}\,(1+z)^{1/4}\Big/\sqrt{\sqrt{z}-\sqrt{1+z}}\right)$

01.14.27.2364.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\operatorname{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{z}-\sqrt{1+z}}}\right) /;\ 0 \le \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.2365.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\operatorname{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{z}-\sqrt{1+z}}}\right) /;\ \operatorname{Im}(z) < 0$$

01.14.27.2366.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\operatorname{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{z}-\sqrt{1+z}}}\right) - \pi /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2367.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{1}{2}\pi\left(1-\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}\right) - 2\sqrt{-\frac{1}{z}}\sqrt{z}\operatorname{csch}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{z}-\sqrt{1+z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{csch}^{-1}\left(\sqrt{2\sqrt{1+z}\Big/\left(\sqrt{z}-\sqrt{1+z}\right)}\right)$

01.14.27.2368.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\operatorname{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{z}-\sqrt{1+z}}}\right) /;\ \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2369.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\operatorname{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{z}-\sqrt{1+z}}}\right) /;\ -\pi < \arg(z) \le 0$$

01.14.27.2370.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\operatorname{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{z}-\sqrt{1+z}}}\right) - \pi /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2371.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\left(\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}} - 1\right)\pi + \frac{2\sqrt{-z^2}}{z}\operatorname{csch}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{z}-\sqrt{1+z}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$

Involving $\tan^{-1}(\sqrt{z-1})$ and $\operatorname{csch}^{-1}(\sqrt{-z})$

01.14.27.2372.01

$$\tan^{-1}(\sqrt{z-1}) = i\operatorname{csch}^{-1}(\sqrt{-z}) + \frac{\pi}{2} /; 0 < \arg(z) \le \pi$$

01.14.27.2373.01

$$\tan^{-1}(\sqrt{z-1}) = -i\operatorname{csch}^{-1}(\sqrt{-z}) + \frac{\pi}{2} /; -\pi < \arg(z) \le 0$$

01.14.27.2374.01

$$\tan^{-1}(\sqrt{z-1}) = \frac{\sqrt{z}}{\sqrt{-z}} \operatorname{csch}^{-1}(\sqrt{-z}) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$ and $\operatorname{csch}^{-1}(\sqrt{-z})$

01.14.27.2375.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = -i\operatorname{csch}^{-1}(\sqrt{-z}) /; 0 < \arg(z) \le \pi$$

01.14.27.2376.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = i\operatorname{csch}^{-1}(\sqrt{-z}) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2377.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = i\operatorname{csch}^{-1}(\sqrt{-z}) - \pi /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2378.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{\pi}{2}\left(\sqrt{z-1}\sqrt{\frac{1}{z-1}} - \sqrt{z}\sqrt{\frac{1}{z}}\right) - \frac{\sqrt{z}}{\sqrt{-z}} \operatorname{csch}^{-1}(\sqrt{-z})$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$ and $\operatorname{csch}^{-1}(\sqrt{-z})$

01.14.27.2379.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = -i\operatorname{csch}^{-1}(\sqrt{-z}) /; \operatorname{Im}(z) > 0$$

01.14.27.2380.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = i \operatorname{csch}^{-1}\left(\sqrt{-z}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2381.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = -i \operatorname{csch}^{-1}\left(\sqrt{-z}\right) + \pi /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2382.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \sqrt{\frac{1}{z-1}} \sqrt{\frac{z-1}{z}} \sqrt{-z} \operatorname{csch}^{-1}\left(\sqrt{-z}\right) - \frac{\pi}{2}\left(\sqrt{-z} \sqrt{-\frac{1}{z}} \sqrt{1-z} \sqrt{\frac{1}{1-z}} - 1\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$ and $\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right)$

01.14.27.2383.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \frac{\pi}{2} - i \operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) /; \operatorname{Im}(z) > 0$$

01.14.27.2384.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = i \operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) + \frac{\pi}{2} /; -\pi < \arg(z) \leq 0$$

01.14.27.2385.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = -i \operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.2386.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \frac{\pi}{2} \sqrt{z} \sqrt{\frac{1}{z}} + \frac{\sqrt{-z}}{\sqrt{z}} \operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$ and $\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right)$

01.14.27.2387.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \frac{\pi}{2} - i \operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) /; 0 \leq \arg(z) < \pi$$

01.14.27.2388.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = i \operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) < 0$$

01.14.27.2389.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = -i\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < 0)$$

01.14.27.2390.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \frac{\pi}{2}\sqrt{z}\sqrt{\frac{1}{z}} - \sqrt{z}\sqrt{-\frac{1}{z}}\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$ and $\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right)$

01.14.27.2391.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = -\frac{\pi}{2} + i\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) \;/;\; \operatorname{Im}(z) > 0$$

01.14.27.2392.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \frac{\pi}{2} - i\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) \;/;\; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2393.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = i\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < 1)$$

01.14.27.2394.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \frac{\sqrt{z-1}}{\sqrt{1-z}}\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) - \frac{\pi\sqrt{-z}\sqrt{z-1}}{2\sqrt{1-z}}\sqrt{\frac{1}{z}}$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$ and $\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right)$

01.14.27.2395.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = i\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) - \frac{\pi}{2} \;/;\; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2396.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \frac{\pi}{2} - i\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) \;/;\; \operatorname{Im}(z) < 0$$

01.14.27.2397.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = i\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < 0)$$

01.14.27.2398.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = -i\,\text{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) + \frac{\pi}{2}\ /;\ (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2399.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \sqrt{-1+z}\ \sqrt{-\frac{1}{z}}\ \sqrt{\frac{z}{-1+z}}\ \text{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) - \frac{\pi\sqrt{-z}\ \sqrt{z-1}}{2\sqrt{1-z}}\ \sqrt{\frac{1}{z}}$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$ and $\text{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right)$

01.14.27.2400.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \frac{\pi}{2} - i\,\text{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right)\ /;\ \text{Im}(z) > 0$$

01.14.27.2401.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \frac{\pi}{2} + i\,\text{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right)\ /;\ \text{Im}(z) \le 0$$

01.14.27.2402.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \sqrt{\frac{1}{z}}\ \sqrt{-z}\ \text{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$ and $\text{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right)$

01.14.27.2403.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \frac{\pi}{2} - i\,\text{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right)\ /;\ 0 \le \arg(z) < \pi$$

01.14.27.2404.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \frac{\pi}{2} + i\,\text{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right)\ /;\ \text{Im}(z) < 0 \lor (z \in \mathbb{R} \land z < 0)$$

01.14.27.2405.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = -z\sqrt{-\frac{1}{z^2}}\ \text{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$ and $\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right)$

01.14.27.2406.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = i\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) /; 0 < \arg(z) \le \pi$$

01.14.27.2407.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = -i\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2408.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = -i\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) - \pi /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.2409.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{1}{2}\pi\left(\sqrt{1-z}\sqrt{\frac{1}{1-z}} - 1\right) - \frac{\sqrt{-z}}{\sqrt{z}}\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$ and $\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right)$

01.14.27.2410.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = i\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) /; 0 < \arg(z) \le \pi \lor (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2411.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = -i\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.2412.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = i\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) - \pi /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.2413.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{1}{2}\pi\left(\sqrt{1-z}\sqrt{\frac{1}{1-z}} - 1\right) + \sqrt{z}\sqrt{-\frac{1}{z}}\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$ and $\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right)$

01.14.27.2414.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = -i\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) /; 0 < \arg(z) \leq \pi \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2415.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = i\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.2416.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \pi + i\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.2417.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\pi}{2}\left(1 - \sqrt{1-z}\sqrt{\frac{1}{1-z}}\right) + \frac{\sqrt{1-z}}{\sqrt{z-1}}\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$ and $\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right)$

01.14.27.2418.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = -i\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) /; 0 < \arg(z) \leq \pi$$

01.14.27.2419.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = i\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2420.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \pi - i\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.2421.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\pi}{2}\left(1 - \sqrt{1-z}\sqrt{\frac{1}{1-z}}\right) + \frac{\sqrt{1-z}\,\sqrt{-z}}{\sqrt{-1+z}}\sqrt{-\frac{1}{z}}\operatorname{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$ and $\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right)$

01.14.27.2422.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = i\operatorname{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) /; 0 < \arg(z) \leq \pi$$

01.14.27.2423.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = -i\,\text{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) /;\ \text{Im}(z) < 0 \lor (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2424.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \pi + i\,\text{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right) /;\ (z \in \mathbb{R} \land z > 1)$$

01.14.27.2425.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2}\left(1 - \sqrt{1-z}\,\sqrt{\frac{1}{1-z}}\right) + \frac{\sqrt{(1-z)\,z}}{\sqrt{-z}}\,\sqrt{\frac{1}{1-z}}\,\text{csch}^{-1}\left(\frac{1}{\sqrt{-z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$ and $\text{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right)$

01.14.27.2426.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = i\,\text{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) /;\ 0 < \arg(z) \le \pi \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2427.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = -i\,\text{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) /;\ \text{Im}(z) < 0$$

01.14.27.2428.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \pi - i\,\text{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right) /;\ (z \in \mathbb{R} \land z > 1)$$

01.14.27.2429.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2}\left(1 - \sqrt{1-z}\,\sqrt{\frac{1}{1-z}}\right) + \sqrt{(1-z)\,z}\,\sqrt{\frac{1}{1-z}}\,\sqrt{-\frac{1}{z}}\,\text{csch}^{-1}\left(\sqrt{-\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{-z^2-1}\right)$

Involving $\tan^{-1}\left(\sqrt{-z^2-1}\right)$ and $\text{csch}^{-1}(z)$

01.14.27.2430.01

$$\tan^{-1}\left(\sqrt{-z^2-1}\right) = i\,\text{csch}^{-1}(z) + \frac{\pi}{2} /;\ -\pi < \arg(z) \le 0$$

01.14.27.2431.01

$$\tan^{-1}\left(\sqrt{-z^2-1}\right) = -i\,\text{csch}^{-1}(z) + \frac{\pi}{2} /;\ 0 < \arg(z) \le \pi$$

01.14.27.2432.01

$$\tan^{-1}\left(\sqrt{-z^2-1}\right) = \frac{\pi}{2} + \frac{\sqrt{-z^2}}{z}\,\text{csch}^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right)$ and $\operatorname{csch}^{-1}(z)$

01.14.27.2433.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right) = i\operatorname{csch}^{-1}(z) \;/;\; 0<\arg(z)<\frac{\pi}{2} \bigvee \frac{\pi}{2}<\arg(z)\leq\pi \bigvee (i\,z\in\mathbb{R}\land i\,z<-1)$$

01.14.27.2434.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right) = -i\operatorname{csch}^{-1}(z) \;/;\; -\pi<\arg(z)<-\frac{\pi}{2} \bigvee -\frac{\pi}{2}<\arg(z)\leq 0 \bigvee (i\,z\in\mathbb{R}\land i\,z>1)$$

01.14.27.2435.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right) = i\operatorname{csch}^{-1}(z)-\pi \;/;\; (i\,z\in\mathbb{R}\land -1<i\,z<0)$$

01.14.27.2436.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right) = -i\operatorname{csch}^{-1}(z)-\pi \;/;\; (i\,z\in\mathbb{R}\land 0<i\,z<1)$$

01.14.27.2437.01

$$\tan^{-1}\left(\frac{1}{\sqrt{-z^2-1}}\right) = \frac{\pi\,i}{2}\left(\frac{\sqrt{-i\,z-1}}{\sqrt{i\,z+1}}+\frac{\sqrt{i\,z-1}}{\sqrt{1-i\,z}}\right)-\frac{\sqrt{-z^2}}{z}\operatorname{csch}^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right)$

Involving $\tan^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right)$ and $\operatorname{csch}^{-1}(z)$

01.14.27.2438.01

$$\tan^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) = i\operatorname{csch}^{-1}(z) \;/;\; 0<\arg(z)<\frac{\pi}{2} \bigvee \frac{\pi}{2}<\arg(z)<\pi \bigvee (i\,z\in\mathbb{R}\land i\,z<-1)$$

01.14.27.2439.01

$$\tan^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) = -i\operatorname{csch}^{-1}(z) \;/;\; -\pi<\arg(z)<-\frac{\pi}{2} \bigvee -\frac{\pi}{2}<\arg(z)<0 \bigvee (i\,z\in\mathbb{R}\land i\,z>1) \bigvee (z\in\mathbb{R}\land z<0)$$

01.14.27.2440.01

$$\tan^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) = -i\,\text{csch}^{-1}(z) + \pi \,/;\, (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2441.01

$$\tan^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) = i\,\text{csch}^{-1}(z) + \pi \,/;\, (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2442.01

$$\tan^{-1}\left(\sqrt{-\frac{1}{z^2+1}}\right) = \sqrt{\frac{1}{-z^2-1}}\,\sqrt{-z^2-1}\left(\frac{i\,\pi}{2}\left(\frac{\sqrt{i\,z-1}}{\sqrt{1-i\,z}} + \frac{\sqrt{-i\,z-1}}{\sqrt{i\,z+1}}\right) - \frac{\sqrt{-z^2}}{z}\,\text{csch}^{-1}(z)\right)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right)$ and $\text{csch}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2443.01

$$\tan^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right) = i\,\text{csch}^{-1}\left(\frac{1}{z}\right) /;\, 0 < \arg(z) < \frac{\pi}{2} \bigvee -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.2444.01

$$\tan^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right) = -i\,\text{csch}^{-1}\left(\frac{1}{z}\right) /;\, \frac{\pi}{2} < \arg(z) \le \pi \bigvee -\frac{\pi}{2} < \arg(z) \le 0 \bigvee (i\,z \in \mathbb{R} \land -1 < i\,z < 1)$$

01.14.27.2445.01

$$\tan^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right) = i\,\text{csch}^{-1}\left(\frac{1}{z}\right) + \pi \,/;\, (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.2446.01

$$\tan^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right) = i\,\text{csch}^{-1}\left(\frac{1}{z}\right) - \pi \,/;\, (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.2447.01

$$\tan^{-1}\left(\frac{z}{\sqrt{-z^2-1}}\right) = \frac{\sqrt{-z^2-1}}{\sqrt{z^2+1}}\left(-\text{csch}^{-1}\left(\frac{1}{z}\right) + \frac{\pi\,i}{2}\left(\sqrt{\frac{1}{1-i\,z}}\,\sqrt{1-i\,z} - \sqrt{\frac{1}{i\,z+1}}\,\sqrt{i\,z+1}\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{1+z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{1+z^2}}\right)$ and $\operatorname{csch}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2448.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2+1}}\right) = i \operatorname{csch}^{-1}\left(\frac{1}{z}\right) /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i z \in \mathbb{R} \wedge 0 < i z < 1)$$

01.14.27.2449.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2+1}}\right) = -i \operatorname{csch}^{-1}\left(\frac{1}{z}\right) /; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) \leq \pi \bigvee (i z \in \mathbb{R} \wedge -1 < i z < 0)$$

01.14.27.2450.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{1+z^2}}\right) = -i \operatorname{csch}^{-1}\left(\frac{1}{z}\right) - \pi /; (i z \in \mathbb{R} \wedge i z < -1)$$

01.14.27.2451.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{1+z^2}}\right) = i \operatorname{csch}^{-1}\left(\frac{1}{z}\right) - \pi /; (i z \in \mathbb{R} \wedge i z > 1)$$

01.14.27.2452.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{1+z^2}}\right) = \frac{z}{\sqrt{-z^2}} \left(\frac{\pi i}{2} \left(\sqrt{\frac{1}{1-i z}} \sqrt{1-i z} - \sqrt{\frac{1}{i z+1}} \sqrt{i z+1}\right) - \operatorname{csch}^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-1-z^2}}\right)$ and $\operatorname{csch}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2453.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-1-z^2}}\right) = -i \operatorname{csch}^{-1}\left(\frac{1}{z}\right) /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i z \in \mathbb{R} \wedge -1 < i z < 0)$$

01.14.27.2454.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-1-z^2}}\right) = i \operatorname{csch}^{-1}\left(\frac{1}{z}\right) /; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) \leq \pi \bigvee (i z \in \mathbb{R} \wedge 0 < i z < 1)$$

01.14.27.2455.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-1-z^2}}\right) = i \operatorname{csch}^{-1}\left(\frac{1}{z}\right) + \pi /; (i z \in \mathbb{R} \wedge i z < -1)$$

01.14.27.2456.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-1-z^2}}\right) = -i\,\mathrm{csch}^{-1}\left(\frac{1}{z}\right) + \pi \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.2457.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{-z^2-1}}\right) = \frac{\sqrt{-z^2-1}}{z}\sqrt{\frac{z^2}{z^2+1}}\left(\frac{\pi\,i}{2}\left(\sqrt{\frac{1}{1-i\,z}}\sqrt{1-i\,z} - \sqrt{\frac{1}{i\,z+1}}\sqrt{i\,z+1}\right) - \mathrm{csch}^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\sqrt{-\frac{z^2}{1+z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{-\frac{z^2}{1+z^2}}\right)$ and $\mathrm{csch}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2458.01

$$\tan^{-1}\left(\sqrt{-\frac{z^2}{1+z^2}}\right) = i\,\mathrm{csch}^{-1}\left(\frac{1}{z}\right) \;/;\; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2459.01

$$\tan^{-1}\left(\sqrt{-\frac{z^2}{1+z^2}}\right) = -i\,\mathrm{csch}^{-1}\left(\frac{1}{z}\right) \;/;\; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) \leq \pi \bigvee (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2460.01

$$\tan^{-1}\left(\sqrt{-\frac{z^2}{1+z^2}}\right) = i\,\mathrm{csch}^{-1}\left(\frac{1}{z}\right) + \pi \;/;\; (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.2461.01

$$\tan^{-1}\left(\sqrt{-\frac{z^2}{1+z^2}}\right) = -i\,\mathrm{csch}^{-1}\left(\frac{1}{z}\right) + \pi \;/;\; (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.2462.01

$$\tan^{-1}\left(\sqrt{-\frac{z^2}{1+z^2}}\right) = -\frac{\sqrt{z^2+1}}{z}\sqrt{-\frac{z^2}{z^2+1}}\left(\frac{\pi\,i}{2}\left(\sqrt{\frac{1}{1-i\,z}}\sqrt{1-i\,z} - \sqrt{\frac{1}{i\,z+1}}\sqrt{i\,z+1}\right) - \mathrm{csch}^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right)$ and $\operatorname{csch}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2463.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right) = -i\operatorname{csch}^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} /; 0 < \arg(z) < \frac{\pi}{2} \bigvee (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.2464.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right) = i\operatorname{csch}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} /; \frac{\pi}{2} < \arg(z) < \pi \bigvee (i\,z \in \mathbb{R} \land -1 < i\,z < 0) \bigvee (z \in \mathbb{R} \land z > 0)$$

01.14.27.2465.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right) = \frac{\pi}{2} - i\operatorname{csch}^{-1}\left(\frac{1}{z}\right) /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.2466.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right) = i\operatorname{csch}^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z < 0) \bigvee (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2467.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right) = -\frac{\sqrt{-z^2-1}}{\sqrt{z^2+1}}\left(\frac{\pi}{2}\sqrt{-\frac{1}{z^2}}\,z - \operatorname{csch}^{-1}\left(\frac{1}{z}\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right)$ and $\operatorname{csch}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2468.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right) = i\operatorname{csch}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) > 0$$

01.14.27.2469.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right) = -i\operatorname{csch}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) < 0$$

01.14.27.2470.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right) = -i\operatorname{csch}^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z > 0)$$

01.14.27.2471.01

$$\tan^{-1}\left(\frac{\sqrt{1+z^2}}{\sqrt{-z^2}}\right) = i\,\operatorname{csch}^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < 0)$$

01.14.27.2472.01

$$\tan^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{-z^2}}\right) = \frac{z}{\sqrt{-z^2}}\operatorname{csch}^{-1}\left(\frac{1}{z}\right) + \frac{1}{2}\pi\sqrt{-z^2}\sqrt{-\frac{1}{z^2}}$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{z^2}}\right)$ and $\operatorname{csch}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2473.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{z^2}}\right) = -i\,\operatorname{csch}^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) < \pi \bigvee (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.2474.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{z^2}}\right) = i\,\operatorname{csch}^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) < 0 \bigvee (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.2475.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{z^2}}\right) = i\,\operatorname{csch}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z > 0) \lor (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2476.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{z^2}}\right) = -i\,\operatorname{csch}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < 0) \lor (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2477.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{z^2}}\right) = \frac{\sqrt{z^2}}{\sqrt{-z^2-1}}\sqrt{-1-\frac{1}{z^2}}\left(\sqrt{-\frac{1}{z^2}}\,z\operatorname{csch}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2}\right)$$

Involving $\tan^{-1}\left(\sqrt{-\frac{1+z^2}{z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{-\frac{1+z^2}{z^2}}\right)$ and $\operatorname{csch}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2478.01

$$\tan^{-1}\left(\sqrt{-\frac{1+z^2}{z^2}}\right) = i\,\text{csch}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; 0 \leq \arg(z) < \pi$$

01.14.27.2479.01

$$\tan^{-1}\left(\sqrt{-\frac{1+z^2}{z^2}}\right) = \frac{\pi}{2} - i\,\text{csch}^{-1}\left(\frac{1}{z}\right) \;/;\; -\pi < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.2480.01

$$\tan^{-1}\left(\sqrt{-\frac{z^2+1}{z^2}}\right) = \sqrt{-\frac{1}{z^2}}\; z\,\text{csch}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2}$$

Involving sech^{-1}

Involving $\tan^{-1}(z)$

Involving $\tan^{-1}(z)$ and $\text{sech}^{-1}\left(\frac{1+z^2}{2z}\right)$

01.14.27.2481.01

$$\tan^{-1}(z) = \frac{1}{2}\left(\sqrt{-\frac{1}{z}}\sqrt{z}\;\text{sech}^{-1}\left(\frac{1+z^2}{2z}\right) + \frac{\pi}{2}\right) /;\; |z| < 1 \bigvee |z| > 1 \bigwedge 0 < \arg(z) \leq \frac{\pi}{2} \bigvee |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) < 0$$

01.14.27.2482.01

$$\tan^{-1}(z) = \frac{1}{2}\left(\sqrt{-\frac{1}{z}}\sqrt{z}\;\text{sech}^{-1}\left(\frac{1+z^2}{2z}\right) - \frac{3\pi}{2}\right) /;\; |z| > 1 \bigwedge \frac{\pi}{2} < \arg(z) < \pi \bigvee |z| > 1 \bigwedge -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.2483.01

$$\tan^{-1}(z) = \frac{1}{2}\left(-i\,\text{sech}^{-1}\left(\frac{1+z^2}{2z}\right) - \frac{3\pi}{2}\right) /;\; |z| > 1 \bigwedge \left(-\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0)\right)$$

01.14.27.2484.01

$$\tan^{-1}(z) = \frac{1}{2}\left(i\,\text{sech}^{-1}\left(\frac{1+z^2}{2z}\right) + \frac{\pi}{2}\right) /;\; |z| < 1 \land \text{Im}(z) \geq 0 \bigvee |z| > 1 \bigwedge 0 < \arg(z) < \frac{\pi}{2}$$

01.14.27.2485.01

$$\tan^{-1}(z) = \frac{1}{2}\left(i\,\text{sech}^{-1}\left(\frac{1+z^2}{2z}\right) - \frac{3\pi}{2}\right) /;\; |z| > 1 \bigwedge \frac{\pi}{2} < \arg(z) < \pi$$

01.14.27.2486.01

$$\tan^{-1}(z) = \frac{1}{2}\left(\frac{\pi}{2} - i\,\text{sech}^{-1}\left(\frac{1+z^2}{2z}\right)\right) /;\; |z| < 1 \land \text{Im}(z) < 0 \bigvee |z| > 1 \bigwedge -\frac{\pi}{2} < \arg(z) \leq 0$$

01.14.27.2487.01

$$\tan^{-1}(z) = \frac{1}{2}\left(-i\,\text{sech}^{-1}\left(\frac{1+z^2}{2z}\right) - \frac{3\pi}{2}\right) /;\; |z| > 1 \bigwedge -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee |z| > 1 \land (z \in \mathbb{R} \land z < -1)$$

01.14.27.2488.01

$$\tan^{-1}(z) = \frac{\pi}{4}\left(\frac{\sqrt{z^2}}{z} - \frac{1-z}{1+z}\sqrt{\left(\frac{z+1}{z-1}\right)^2}\left(\frac{\sqrt{z^2}}{z} - 1\right)\right) + \frac{1}{2}\sqrt{-\frac{z+1}{z}}\sqrt{\frac{1}{1-z^2}}\sqrt{z-z^2}\,\operatorname{sech}^{-1}\left(\frac{1+z^2}{2z}\right)$$

Involving $\tan^{-1}(z)$ and $\operatorname{sech}^{-1}\left(\frac{1+z^2}{1-z^2}\right)$

01.14.27.2489.01

$$\tan^{-1}(z) = \frac{1}{2} i \operatorname{sech}^{-1}\left(\frac{1+z^2}{1-z^2}\right) /; 0 < \arg(z) < \frac{\pi}{2} \bigvee \frac{\pi}{2} < \arg(z) \leq \pi \bigvee (i z \in \mathbb{R} \land -1 < i z < 0)$$

01.14.27.2490.01

$$\tan^{-1}(z) = -\frac{i}{2} \operatorname{sech}^{-1}\left(\frac{1+z^2}{1-z^2}\right) /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) \leq 0 \bigvee (i z \in \mathbb{R} \land 0 < i z < 1)$$

01.14.27.2491.01

$$\tan^{-1}(z) = -\frac{1}{2} i \operatorname{sech}^{-1}\left(\frac{1+z^2}{1-z^2}\right) - \pi /; (i z \in \mathbb{R} \land i z > 1)$$

01.14.27.2492.01

$$\tan^{-1}(z) = \frac{1}{2} i \operatorname{sech}^{-1}\left(\frac{1+z^2}{1-z^2}\right) + \pi /; (i z \in \mathbb{R} \land i z < -1)$$

01.14.27.2493.01

$$\tan^{-1}(z) = \frac{1}{2}\left(\sqrt{1-i z}\sqrt{\frac{1}{1-i z}} - \sqrt{i z+1}\sqrt{\frac{1}{i z+1}}\right)\pi - \frac{\sqrt{-z^2}}{2 z} \operatorname{sech}^{-1}\left(\frac{1+z^2}{1-z^2}\right)$$

Involving $\tan^{-1}(z)$ and $\operatorname{sech}^{-1}\left(\frac{z^2+1}{z^2-1}\right)$

01.14.27.2494.01

$$\tan^{-1}(z) = \frac{1}{2} i \operatorname{sech}^{-1}\left(\frac{z^2+1}{z^2-1}\right) + \frac{\pi}{2} /; 0 \leq \arg(z) \leq \frac{\pi}{2}$$

01.14.27.2495.01

$$\tan^{-1}(z) = \frac{\pi}{2} - \frac{1}{2} i \operatorname{sech}^{-1}\left(\frac{z^2+1}{z^2-1}\right) /; -\frac{\pi}{2} < \arg(z) < 0$$

01.14.27.2496.01

$$\tan^{-1}(z) = -\frac{\pi}{2} + \frac{1}{2} i \operatorname{sech}^{-1}\left(\frac{z^2+1}{z^2-1}\right) /; \frac{\pi}{2} < \arg(z) < \pi$$

01.14.27.2497.01

$$\tan^{-1}(z) = -\frac{\pi}{2} - \frac{1}{2} i \operatorname{sech}^{-1}\left(\frac{z^2+1}{z^2-1}\right) /; -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.2498.01

$$\tan^{-1}(z) = \frac{1}{2} z \sqrt{-\frac{1}{z^2}} \operatorname{sech}^{-1}\left(\frac{z^2+1}{z^2-1}\right) + \frac{\pi\sqrt{z^2}}{2 z}$$

Involving $\tan^{-1}(z)$ and $\operatorname{sech}^{-1}\left(\sqrt{z^2+1}\right)$

01.14.27.2499.01

$$\tan^{-1}(z) = i \operatorname{sech}^{-1}\left(\sqrt{z^2+1}\right) /; 0 < \arg(z) \leq \pi$$

01.14.27.2500.01

$$\tan^{-1}(z) = -i \operatorname{sech}^{-1}\left(\sqrt{z^2+1}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.2501.01

$$\tan^{-1}(z) = -\frac{\sqrt{-z^2}}{z} \operatorname{sech}^{-1}\left(\sqrt{z^2+1}\right)$$

Involving $\tan^{-1}(z)$ and $\operatorname{sech}^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right)$

01.14.27.2502.01

$$\tan^{-1}(z) = i \operatorname{sech}^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) \geq 0$$

01.14.27.2503.01

$$\tan^{-1}(z) = \frac{\pi}{2} - i \operatorname{sech}^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right) /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee -\frac{\pi}{2} < \arg(z) < 0 \bigvee (i z \in \mathbb{R} \wedge 0 < i z < 1)$$

01.14.27.2504.01

$$\tan^{-1}(z) = -\frac{3\pi}{2} - i \operatorname{sech}^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right) /; (i z \in \mathbb{R} \wedge i z > 1)$$

01.14.27.2505.01

$$\tan^{-1}(z) = \pi\left(\sqrt{1-i z} \sqrt{\frac{1}{1-i z}} - \frac{1}{2}\right) + \sqrt{-\frac{1}{z}} \sqrt{z} \operatorname{sech}^{-1}\left(\frac{\sqrt{1+z^2}}{z}\right)$$

Involving $\tan^{-1}(z)$ and $\operatorname{sech}^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right)$

01.14.27.2506.01

$$\tan^{-1}(z) = i \operatorname{sech}^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right) + \frac{\pi}{2} /; 0 \leq \arg(z) \leq \frac{\pi}{2}$$

01.14.27.2507.01

$$\tan^{-1}(z) = \frac{\pi}{2} - i \operatorname{sech}^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right) /; -\frac{\pi}{2} < \arg(z) < 0$$

01.14.27.2508.01

$$\tan^{-1}(z) = i\,\text{sech}^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right) - \frac{\pi}{2} /; \frac{\pi}{2} < \arg(z) < \pi$$

01.14.27.2509.01

$$\tan^{-1}(z) = -\frac{\pi}{2} - i\,\text{sech}^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right) /; -\pi < \arg(z) \le -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.2510.01

$$\tan^{-1}(z) = \frac{\sqrt{z^2}}{z}\left(\sqrt{-\frac{1}{z^2+1}}\,\sqrt{z^2+1}\,\text{sech}^{-1}\left(\frac{\sqrt{z^2+1}}{\sqrt{z^2}}\right) + \frac{\pi}{2}\right)$$

Involving $\tan^{-1}(z)$ and $\text{sech}^{-1}\left(\frac{\sqrt{-1-z^2}}{\sqrt{-z^2}}\right)$

01.14.27.2511.01

$$\tan^{-1}(z) = i\,\text{sech}^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{-z^2}}\right) + \frac{\pi}{2} /; 0 \le \arg(z) < \frac{\pi}{2} \bigvee (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.2512.01

$$\tan^{-1}(z) = \frac{\pi}{2} - i\,\text{sech}^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{-z^2}}\right) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2513.01

$$\tan^{-1}(z) = i\,\text{sech}^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{-z^2}}\right) - \frac{\pi}{2} /; \frac{\pi}{2} < \arg(z) < \pi \bigvee (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2514.01

$$\tan^{-1}(z) = -i\,\text{sech}^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{-z^2}}\right) - \frac{\pi}{2} /; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (i\,z \in \mathbb{R} \land i\,z > 1) \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.2515.01

$$\tan^{-1}(z) = \frac{1}{2}\left(\sqrt{\frac{1}{z^2}}\,z + \sqrt{\frac{1}{1-i\,z}}\,\sqrt{1-i\,z} - \sqrt{i\,z+1}\,\sqrt{\frac{1}{i\,z+1}}\right)\pi + z\,\sqrt{-\frac{1}{z^2}}\,\text{sech}^{-1}\left(\frac{\sqrt{-z^2-1}}{\sqrt{-z^2}}\right)$$

Involving $\tan^{-1}(z)$ and $\text{sech}^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right)$

01.14.27.2516.01

$$\tan^{-1}(z) = i\,\text{sech}^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right) + \frac{\pi}{2} \,/;\, 0 \le \arg(z) < \frac{\pi}{2} \bigvee (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.2517.01

$$\tan^{-1}(z) = \frac{\pi}{2} - i\,\text{sech}^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right) /;\, -\frac{\pi}{2} < \arg(z) < 0 \bigvee (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2518.01

$$\tan^{-1}(z) = i\,\text{sech}^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right) - \frac{\pi}{2} \,/;\, \frac{\pi}{2} < \arg(z) < \pi \bigvee (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2519.01

$$\tan^{-1}(z) = -\frac{\pi}{2} - i\,\text{sech}^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right) /;\, -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0) \bigvee (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.2520.01

$$\tan^{-1}(z) = \frac{\pi}{2}\sqrt{\frac{i+z}{i-z}}\sqrt{\frac{1}{z^2}}\sqrt{\frac{i-z}{i+z}}\,z + \frac{\sqrt{z^2}\sqrt{z^2+1}}{z}\sqrt{-\frac{1}{z^2+1}}\,\text{sech}^{-1}\left(\sqrt{\frac{z^2+1}{z^2}}\right)$$

Involving $\tan^{-1}(z)$ and $\text{sech}^{-1}\left(\sqrt{2}\,(1+z^2)^{1/4} \middle/ \sqrt{\sqrt{1+z^2}+1}\right)$

01.14.27.2521.01

$$\tan^{-1}(z) = -2\,i\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}+1}}\right) /;\, -\pi < \arg(z) \le 0$$

01.14.27.2522.01

$$\tan^{-1}(z) = 2\,i\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}+1}}\right) /;\, 0 < \arg(z) \le \pi$$

01.14.27.2523.01

$$\tan^{-1}(z) = -\frac{2\sqrt{-z^2}}{z}\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\operatorname{sech}^{-1}\left(\sqrt{2}\,(1+z^2)^{1/4}\Big/\sqrt{\sqrt{1+z^2}-1}\right)$

01.14.27.2524.01

$$\tan^{-1}(z) == 2\,i\,\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}-1}}\right)+\pi\ /;\ 0\leq\arg(z)\leq\frac{\pi}{2}$$

01.14.27.2525.01

$$\tan^{-1}(z) == \pi-2\,i\,\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}-1}}\right)\ /;\ -\frac{\pi}{2}<\arg(z)<0$$

01.14.27.2526.01

$$\tan^{-1}(z) == 2\,i\,\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}-1}}\right)-\pi\ /;\ \frac{\pi}{2}<\arg(z)<\pi$$

01.14.27.2527.01

$$\tan^{-1}(z) == -2\,i\,\cosh^{-1}\left(\frac{\sqrt{\sqrt{z^2+1}-1}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right)-\pi\ /;\ -\pi<\arg(z)\leq-\frac{\pi}{2}\bigvee(z\in\mathbb{R}\land z<0)$$

01.14.27.2528.01

$$\tan^{-1}(z) == \frac{\sqrt{z^2}}{z}\left(\pi-2\cos^{-1}\left(\frac{\sqrt{\sqrt{z^2+1}-1}}{\sqrt{2}\,\sqrt[4]{z^2+1}}\right)\right)$$

Involving $\tan^{-1}(z)$ and $\operatorname{sech}^{-1}\left(\sqrt{2\sqrt{1+z^2}\Big/\sqrt{1+z^2}+1}\right)$

01.14.27.2529.01

$$\tan^{-1}(z) == -2\,i\,\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}+1}}\right)\ /;\ -\pi<\arg(z)\leq 0$$

01.14.27.2530.01

$$\tan^{-1}(z) = 2\,i\,\mathrm{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}+1}}\right) /;\ 0 < \arg(z) \le \pi$$

01.14.27.2531.01

$$\tan^{-1}(z) = -2\,\frac{\sqrt{-z^2}}{z}\,\mathrm{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}+1}}\right)$$

Involving $\tan^{-1}(z)$ and $\mathrm{sech}^{-1}\left(\sqrt{2\sqrt{1+z^2}\Big/\left(\sqrt{1+z^2}-1\right)}\right)$

01.14.27.2532.01

$$\tan^{-1}(z) = \pi + 2\,i\,\mathrm{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}-1}}\right) /;\ 0 \le \arg(z) < \frac{\pi}{2} \bigvee (i\,z \in \mathbb{R} \land i\,z < -1)$$

01.14.27.2533.01

$$\tan^{-1}(z) = \pi - 2\,i\,\mathrm{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}-1}}\right) /;\ -\frac{\pi}{2} < \arg(z) < 0 \bigvee (i\,z \in \mathbb{R} \land 0 < i\,z < 1)$$

01.14.27.2534.01

$$\tan^{-1}(z) = 2\,i\,\mathrm{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}-1}}\right) - \pi /;\ \frac{\pi}{2} < \arg(z) < \pi \bigvee (i\,z \in \mathbb{R} \land -1 < i\,z < 0)$$

01.14.27.2535.01

$$\tan^{-1}(z) = -2\,i\,\mathrm{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}-1}}\right) - \pi /;\ -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0) \bigvee (i\,z \in \mathbb{R} \land i\,z > 1)$$

01.14.27.2536.01

$$\tan^{-1}(z) = 2\sqrt{-\frac{1}{z^2}}\,\mathrm{sech}^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{\sqrt{z^2+1}-1}}\right) z + \pi\sqrt{\frac{i+z}{i-z}}\sqrt{\frac{1}{z^2}}\sqrt{\frac{i-z}{i+z}}\,z$$

Involving $\tan^{-1}(z)$ and $\mathrm{sech}^{-1}\left(\sqrt{2}\left(1+z^2\right)^{1/4}\Big/\sqrt{\sqrt{1+z^2}+z}\right)$

01.14.27.2537.01

$$\tan^{-1}(z) = \frac{\pi}{2} - 2\,i\,\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}+z}}\right) /;\ \operatorname{Im}(z) < 0$$

01.14.27.2538.01

$$\tan^{-1}(z) = \frac{\pi}{2} + 2\,i\,\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}+z}}\right) /;\ \operatorname{Im}(z) \geq 0$$

01.14.27.2539.01

$$\tan^{-1}(z) = 2\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}+z}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}(z)$ and $\operatorname{sech}^{-1}\left(\sqrt{2}\,(1+z^2)^{1/4} \Big/ \sqrt{\sqrt{1+z^2}-z}\right)$

01.14.27.2540.01

$$\tan^{-1}(z) = -2\,i\,\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}-z}}\right) - \frac{\pi}{2} /;\ \operatorname{Im}(z) \leq 0$$

01.14.27.2541.01

$$\tan^{-1}(z) = 2\,i\,\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}-z}}\right) - \frac{\pi}{2} /;\ \operatorname{Im}(z) > 0$$

01.14.27.2542.01

$$\tan^{-1}(z) = -2\sqrt{\frac{1}{z}}\,\sqrt{-z}\,\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z^2)^{1/4}}{\sqrt{\sqrt{1+z^2}-z}}\right) - \frac{\pi}{2}$$

Involving $\tan^{-1}(z)$ and $\operatorname{sech}^{-1}\left(\sqrt{2\sqrt{1+z^2} \Big/ \left(\sqrt{1+z^2}+z\right)}\right)$

01.14.27.2543.01

$$\tan^{-1}(z) = 2\,i\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}+z}}\right) + \frac{\pi}{2} \,/;\, \text{Im}(z) \geq 0$$

01.14.27.2544.01

$$\tan^{-1}(z) = \frac{\pi}{2} - 2\,i\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}+z}}\right) \,/;\, \text{Im}(z) < 0$$

01.14.27.2545.01

$$\tan^{-1}(z) = 2\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{z+\sqrt{z^2+1}}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}(z)$ and $\text{sech}^{-1}\left(\sqrt{2\sqrt{1+z^2}\,\big/\left(\sqrt{1+z^2}-z\right)}\right)$

01.14.27.2546.01

$$\tan^{-1}(z) = -2\,i\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}-z}}\right) - \frac{\pi}{2} \,/;\, \text{Im}(z) \leq 0$$

01.14.27.2547.01

$$\tan^{-1}(z) = 2\,i\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z^2}}{\sqrt{1+z^2}-z}}\right) - \frac{\pi}{2} \,/;\, \text{Im}(z) > 0$$

01.14.27.2548.01

$$\tan^{-1}(z) = -2\sqrt{\frac{1}{z}}\,\sqrt{-z}\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{z^2+1}}{\sqrt{z^2+1}-z}}\right) - \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\text{sech}^{-1}\left(\frac{1+z}{1-z}\right)$

01.14.27.2549.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\frac{i}{2}\,\text{sech}^{-1}\left(\frac{1+z}{1-z}\right) \,/;\, -\pi < \arg(z) \leq 0$$

01.14.27.2550.01

$$\tan^{-1}\left(\sqrt{z}\right) = \frac{i}{2}\,\text{sech}^{-1}\left(\frac{1+z}{1-z}\right) \,/;\, \text{Im}(z) > 0 \lor (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2551.01

$$\tan^{-1}(\sqrt{z}) = \frac{i}{2}\operatorname{sech}^{-1}\left(\frac{1+z}{1-z}\right) + \pi \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.2552.01

$$\tan^{-1}(\sqrt{z}) = \frac{1}{2}\left(1 - \sqrt{z+1}\,\sqrt{\frac{1}{z+1}}\right)\pi - \frac{\sqrt{-z}}{2\sqrt{z}}\operatorname{sech}^{-1}\left(\frac{1+z}{1-z}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\operatorname{sech}^{-1}\left(\frac{z+1}{z-1}\right)$

01.14.27.2553.01

$$\tan^{-1}(\sqrt{z}) = \frac{1}{2}\,i\operatorname{sech}^{-1}\left(\frac{z+1}{z-1}\right) + \frac{\pi}{2} \;/;\; \operatorname{Im}(z) \geq 0$$

01.14.27.2554.01

$$\tan^{-1}(\sqrt{z}) = -\frac{1}{2}\,i\operatorname{sech}^{-1}\left(\frac{z+1}{z-1}\right) + \frac{\pi}{2} \;/;\; \operatorname{Im}(z) < 0$$

01.14.27.2555.01

$$\tan^{-1}(\sqrt{z}) = \frac{1}{2}\sqrt{-\frac{1}{z}}\,\sqrt{z}\operatorname{sech}^{-1}\left(\frac{z+1}{z-1}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}(\sqrt{z})$ and $\operatorname{sech}^{-1}\left(\frac{2\sqrt{z}}{1+z}\right)$

01.14.27.2556.01

$$\tan^{-1}(\sqrt{z}) = \frac{1}{2}\left(\frac{\pi}{2} - i\operatorname{sech}^{-1}\left(\frac{1+z}{2\sqrt{z}}\right)\right) \;/;\; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2557.01

$$\tan^{-1}(\sqrt{z}) = \frac{1}{2}\left(i\operatorname{sech}^{-1}\left(\frac{1+z}{2\sqrt{z}}\right) + \frac{\pi}{2}\right) \;/;\; 0 < \arg(z) \leq \pi \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2558.01

$$\tan^{-1}(\sqrt{z}) = \frac{1}{2}\left(\frac{\pi}{2} - \sqrt{\frac{1}{z-1}}\,\sqrt{z-1}\,\sqrt{\frac{1}{z}}\,\sqrt{-z}\operatorname{sech}^{-1}\left(\frac{1+z}{2\sqrt{z}}\right)\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\operatorname{sech}^{-1}(\sqrt{z+1})$

01.14.27.2559.01

$$\tan^{-1}(\sqrt{z}) = -i\operatorname{sech}^{-1}(\sqrt{z+1}) \;/;\; -\pi < \arg(z) \leq 0$$

01.14.27.2560.01

$$\tan^{-1}(\sqrt{z}) = i\operatorname{sech}^{-1}(\sqrt{z+1}) \;/;\; 0 < \arg(z) \leq \pi$$

01.14.27.2561.01

$$\tan^{-1}(\sqrt{z}) = -\frac{\sqrt{-z}}{\sqrt{z}}\operatorname{sech}^{-1}(\sqrt{z+1})$$

Involving $\tan^{-1}(\sqrt{z})$ and $\operatorname{sech}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right)$

01.14.27.2562.01

$$\tan^{-1}(\sqrt{z}) = i\operatorname{sech}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) \geq 0$$

01.14.27.2563.01

$$\tan^{-1}(\sqrt{z}) = -i\operatorname{sech}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) < 0$$

01.14.27.2564.01

$$\tan^{-1}(\sqrt{z}) = \sqrt{-\frac{1}{z}} \sqrt{z} \operatorname{sech}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}(\sqrt{z})$ and $\operatorname{sech}^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right)$

01.14.27.2565.01

$$\tan^{-1}(\sqrt{z}) = i\operatorname{sech}^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right) + \frac{\pi}{2} /; 0 \leq \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.2566.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2} - i\operatorname{sech}^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.2567.01

$$\tan^{-1}(\sqrt{z}) = i\operatorname{sech}^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2568.01

$$\tan^{-1}(\sqrt{z}) = \sqrt{-\frac{1}{z}} \sqrt{z} \operatorname{sech}^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{-z}}\right) + \frac{1}{2}\pi \sqrt{\frac{z}{z+1}} \sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}(\sqrt{z})$ and $\operatorname{sech}^{-1}\left(\sqrt{\frac{z+1}{z}}\right)$

01.14.27.2569.01

$$\tan^{-1}(\sqrt{z}) = i\operatorname{sech}^{-1}\left(\sqrt{\frac{z+1}{z}}\right) + \frac{\pi}{2} /; 0 \leq \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.2570.01

$$\tan^{-1}(\sqrt{z}) = -i\operatorname{sech}^{-1}\left(\sqrt{\frac{z+1}{z}}\right) + \frac{\pi}{2} /; \operatorname{Im}(z) < 0$$

01.14.27.2571.01

$$\tan^{-1}\left(\sqrt{z}\right) = i \operatorname{sech}^{-1}\left(\sqrt{\frac{z+1}{z}}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2572.01

$$\tan^{-1}\left(\sqrt{z}\right) = \sqrt{-\frac{1}{z+1}} \sqrt{z+1} \operatorname{sech}^{-1}\left(\sqrt{\frac{z+1}{z}}\right) + \frac{\pi}{2} \sqrt{\frac{z+1}{z}} \sqrt{\frac{z}{z+1}}$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\operatorname{sech}^{-1}\left(\sqrt{2}\,(1+z)^{1/4} \middle/ \sqrt{\sqrt{1+z}+1}\right)$

01.14.27.2573.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2 i \operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+1}}\right) /; 0 < \arg(z) \leq \pi$$

01.14.27.2574.01

$$\tan^{-1}\left(\sqrt{z}\right) = -2 i \operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+1}}\right) /; -\pi < \arg(z) \leq 0$$

01.14.27.2575.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\frac{2\sqrt{-z^2}}{z} \operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+1}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\operatorname{sech}^{-1}\left(\sqrt{2}\,(1+z)^{1/4} \middle/ \sqrt{\sqrt{1+z}-1}\right)$

01.14.27.2576.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi + 2 i \operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-1}}\right) /; \operatorname{Im}(z) \geq 0$$

01.14.27.2577.01

$$\tan^{-1}\left(\sqrt{z}\right) = \pi - 2 i \operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-1}}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.2578.01

$$\tan^{-1}\left(\sqrt{z}\right) = 2\sqrt{-\frac{1}{z}} \sqrt{z} \operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-1}}\right) + \pi$$

Involving $\tan^{-1}\left(\sqrt{z}\right)$ and $\operatorname{sech}^{-1}\left(\sqrt{2\sqrt{1+z} \middle/ \left(\sqrt{1+z}+1\right)}\right)$

01.14.27.2579.01

$$\tan^{-1}(\sqrt{z}) == -2\,i\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right) /;\ -\pi < \arg(z) \leq 0$$

01.14.27.2580.01

$$\tan^{-1}(\sqrt{z}) == 2\,i\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right) /;\ 0 < \arg(z) \leq \pi$$

01.14.27.2581.01

$$\tan^{-1}(\sqrt{z}) == -\frac{2\sqrt{-z}}{\sqrt{z}}\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right)$$

Involving $\tan^{-1}(\sqrt{z})$ and $\text{sech}^{-1}\left(\sqrt{2\sqrt{1+z}\,/\left(\sqrt{1+z}-1\right)}\right)$

01.14.27.2582.01

$$\tan^{-1}(\sqrt{z}) == \pi + 2\,i\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right) /;\ 0 \leq \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.2583.01

$$\tan^{-1}(\sqrt{z}) == \pi - 2\,i\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right) /;\ \text{Im}(z) < 0$$

01.14.27.2584.01

$$\tan^{-1}(\sqrt{z}) == 2\,i\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{z+1}}{\sqrt{z+1}-1}}\right) - \pi /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2585.01

$$\tan^{-1}(\sqrt{z}) == 2\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right) + \sqrt{\frac{z}{z+1}}\,\sqrt{\frac{z+1}{z}}\,\pi$$

Involving $\tan^{-1}(\sqrt{z})$ and $\text{sech}^{-1}\left(\sqrt{2}\,(1+z)^{1/4}\Big/\sqrt{\sqrt{1+z}+\sqrt{z}}\right)$

01.14.27.2586.01

$$\tan^{-1}(\sqrt{z}) == \frac{\pi}{2} + 2\,i\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) /;\ \text{Im}(z) \geq 0$$

01.14.27.2587.01

$$\tan^{-1}(\sqrt{z}) == \frac{\pi}{2} - 2\,i\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) /;\ \text{Im}(z) < 0$$

01.14.27.2588.01

$$\tan^{-1}(\sqrt{z}) = 2\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right)+\frac{\pi}{2}$$

Involving $\tan^{-1}(\sqrt{z})$ and $\operatorname{sech}^{-1}\left(\sqrt{2}\,(1+z)^{1/4}\middle/\sqrt{\sqrt{1+z}-\sqrt{z}}\right)$

01.14.27.2589.01

$$\tan^{-1}(\sqrt{z}) = 2\,i\,\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right)-\frac{\pi}{2}\;/;\;0<\arg(z)\leq\pi$$

01.14.27.2590.01

$$\tan^{-1}(\sqrt{z}) = -2\,i\,\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right)-\frac{\pi}{2}\;/;\;-\pi<\arg(z)\leq 0$$

01.14.27.2591.01

$$\tan^{-1}(\sqrt{z}) = -\frac{2\sqrt{-z^2}}{z}\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right)-\frac{\pi}{2}$$

Involving $\tan^{-1}(\sqrt{z})$ and $\operatorname{sech}^{-1}\left(\sqrt{2\sqrt{1+z}\middle/\left(\sqrt{1+z}+\sqrt{z}\right)}\right)$

01.14.27.2592.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2}+2\,i\,\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right)\;/;\;\operatorname{Im}(z)\geq 0$$

01.14.27.2593.01

$$\tan^{-1}(\sqrt{z}) = \frac{\pi}{2}-2\,i\,\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right)\;/;\;\operatorname{Im}(z)<0$$

01.14.27.2594.01

$$\tan^{-1}(\sqrt{z}) = 2\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right)+\frac{\pi}{2}$$

Involving $\tan^{-1}(\sqrt{z})$ and $\operatorname{sech}^{-1}\left(\sqrt{2\sqrt{1+z}\middle/\left(\sqrt{1+z}+\sqrt{z}\right)}\right)$

01.14.27.2595.01

$$\tan^{-1}(\sqrt{z}) = 2\,i\,\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-\sqrt{z}}}\right)-\frac{\pi}{2}\;/;\;0<\arg(z)\leq\pi$$

01.14.27.2596.01

$$\tan^{-1}\left(\sqrt{z}\right) = -2\,i\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-\sqrt{z}}}\right) - \frac{\pi}{2} \;/;\; -\pi < \arg(z) \leq 0$$

01.14.27.2597.01

$$\tan^{-1}\left(\sqrt{z}\right) = -\frac{2\sqrt{-z^2}}{z}\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-\sqrt{z}}}\right) - \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\text{sech}^{-1}\left(\frac{1+z}{1-z}\right)$

01.14.27.2598.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - \frac{1}{2}\,i\,\text{sech}^{-1}\left(\frac{1+z}{1-z}\right) \;/;\; \text{Im}(z) > 0$$

01.14.27.2599.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} + \frac{1}{2}\,i\,\text{sech}^{-1}\left(\frac{1+z}{1-z}\right) \;/;\; -\pi < \arg(z) \leq 0$$

01.14.27.2600.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{i}{2}\,\text{sech}^{-1}\left(\frac{1+z}{1-z}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < 0)$$

01.14.27.2601.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\sqrt{-z^2}}{2\,z}\,\text{sech}^{-1}\left(\frac{1+z}{1-z}\right) + \frac{\pi}{2}\sqrt{\frac{1}{z}}\,\sqrt{z}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\text{sech}^{-1}\left(\frac{z+1}{z-1}\right)$

01.14.27.2602.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{i}{2}\,\text{sech}^{-1}\left(\frac{z+1}{z-1}\right) \;/;\; 0 \leq \arg(z) < \pi \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2603.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\,i\,\text{sech}^{-1}\left(\frac{z+1}{z-1}\right) \;/;\; \text{Im}(z) < 0$$

01.14.27.2604.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{i}{2}\,\text{sech}^{-1}\left(\frac{z+1}{z-1}\right) - \pi \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2605.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\left(\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 1\right)\pi - \frac{1}{2}\sqrt{z}\sqrt{-\frac{1}{z}}\operatorname{sech}^{-1}\left(\frac{z+1}{z-1}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{sech}^{-1}\left(\frac{z+1}{2\sqrt{z}}\right)$

01.14.27.2606.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2} i \operatorname{sech}^{-1}\left(\frac{z+1}{2\sqrt{z}}\right) + \frac{\pi}{4} /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2607.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{4} - \frac{1}{2} i \operatorname{sech}^{-1}\left(\frac{z+1}{2\sqrt{z}}\right) /; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land 0 < z < 1) \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2608.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\frac{i}{2} \operatorname{sech}^{-1}\left(\frac{z+1}{2\sqrt{z}}\right) - \frac{3\pi}{4} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2609.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\pi\left(\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 1\right) + \frac{\sqrt{1-z}}{2\sqrt{z-1}} \operatorname{sech}^{-1}\left(\frac{z+1}{2\sqrt{z}}\right) + \frac{\pi}{4}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{sech}^{-1}\left(\sqrt{1+z}\right)$

01.14.27.2610.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - i \operatorname{sech}^{-1}\left(\sqrt{z+1}\right) /; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2611.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i \operatorname{sech}^{-1}\left(\sqrt{z+1}\right) + \frac{\pi}{2} /; -\pi < \arg(z) \le 0$$

01.14.27.2612.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i \operatorname{sech}^{-1}\left(\sqrt{z+1}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2613.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\sqrt{-z^2}}{z} \operatorname{sech}^{-1}\left(\sqrt{z+1}\right) + \frac{1}{2}\pi\sqrt{\frac{z+1}{z}}\sqrt{\frac{z}{z+1}}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{sech}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right)$

01.14.27.2614.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i \operatorname{sech}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.2615.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i \operatorname{sech}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) /; 0 \leq \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.2616.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i \operatorname{sech}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right) - \pi /; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2617.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z}{z+1}} \sqrt{\frac{z+1}{z}} - 1\right) - \sqrt{z} \sqrt{-\frac{1}{z}} \operatorname{sech}^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{sech}^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{-z}}\right)$

01.14.27.2618.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i \operatorname{sech}^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{-z}}\right) /; \operatorname{Im}(z) \geq 0$$

01.14.27.2619.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i \operatorname{sech}^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{-z}}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.2620.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\sqrt{z} \sqrt{-\frac{1}{z}} \operatorname{sech}^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{-z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{sech}^{-1}\left(\sqrt{\frac{z+1}{z}}\right)$

01.14.27.2621.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -i \operatorname{sech}^{-1}\left(\sqrt{\frac{z+1}{z}}\right) /; \operatorname{Im}(z) \geq 0$$

01.14.27.2622.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = i \operatorname{sech}^{-1}\left(\sqrt{\frac{z+1}{z}}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.2623.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -\sqrt{z} \sqrt{-\frac{1}{z}} \operatorname{sech}^{-1}\left(\sqrt{\frac{z+1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{sech}^{-1}\left(\sqrt{2}\,(1+z)^{1/4} \middle/ \sqrt{\sqrt{1+z}+1}\right)$

01.14.27.2624.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+1}}\right) + \frac{\pi}{2} \;/;\; -\pi < \arg(z) \leq 0$$

01.14.27.2625.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - 2\,i\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+1}}\right) \;/;\; \text{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2626.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+1}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2627.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{2\sqrt{-z^2}}{z}\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+1}}\right) + \frac{1}{2}\pi\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\text{sech}^{-1}\left(\sqrt{2}\,(1+z)^{1/4}\Big/\sqrt{\sqrt{1+z}-1}\right)$

01.14.27.2628.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-1}}\right) - \frac{\pi}{2} \;/;\; 0 \leq \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.2629.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-1}}\right) - \frac{\pi}{2} \;/;\; \text{Im}(z) < 0$$

01.14.27.2630.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-1}}\right) - \frac{3\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2631.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}} - 2\right) - 2\sqrt{z}\sqrt{-\frac{1}{z}}\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-1}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\text{sech}^{-1}\left(\sqrt{2\sqrt{1+z}\Big/\left(\sqrt{1+z}+1\right)}\right)$

01.14.27.2632.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2} - 2\,i\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right) \;/;\; \text{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2633.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\,\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right) + \frac{\pi}{2} \;/;\; -\pi < \arg(z) \le 0$$

01.14.27.2634.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right) - \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2635.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{2\sqrt{-z^2}}{z}\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+1}}\right) + \frac{1}{2}\pi\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{sech}^{-1}\left(\sqrt{2\sqrt{1+z}\,/\left(\sqrt{1+z}-1\right)}\right)$

01.14.27.2636.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right) - \frac{\pi}{2} \;/;\; 0 \le \arg(z) < \pi \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2637.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\,\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right) - \frac{\pi}{2} \;/;\; \operatorname{Im}(z) < 0$$

01.14.27.2638.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-1}}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2639.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{z+1}}{\sqrt{z+1}-1}}\right) - \frac{\pi\sqrt{-z-1}\,\sqrt{z}}{2\sqrt{-z\,(z+1)}}$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{sech}^{-1}\left(\sqrt{2}\,(1+z)^{1/4}\Big/\sqrt{\sqrt{1+z}+\sqrt{z}}\right)$

01.14.27.2640.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) \;/;\; 0 \le \arg(z) < \pi \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2641.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\,\operatorname{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) \;/;\; \operatorname{Im}(z) < 0$$

01.14.27.2642.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right) - \pi\ /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2643.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z}{z+1}}\,\sqrt{\frac{z+1}{z}} - 1\right) - 2\sqrt{z}\,\sqrt{-\frac{1}{z}}\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}+\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\text{sech}^{-1}\left(\sqrt{2}\,(1+z)^{1/4} \Big/ \sqrt{\sqrt{1+z}-\sqrt{z}}\right)$

01.14.27.2644.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \pi - 2\,i\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right)\ /;\ \text{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2645.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right) + \pi\ /;\ -\pi < \arg(z) \leq 0$$

01.14.27.2646.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right)\ /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2647.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\pi\left(\sqrt{\frac{z+1}{z}}\,\sqrt{\frac{z}{z+1}} + 1\right) + \frac{2\sqrt{-z^2}}{z}\,\text{sech}^{-1}\left(\frac{\sqrt{2}\,(1+z)^{1/4}}{\sqrt{\sqrt{1+z}-\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\text{sech}^{-1}\left(\sqrt{2\sqrt{1+z}\Big/\left(\sqrt{1+z}+\sqrt{z}\right)}\right)$

01.14.27.2648.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right)\ /;\ 0 \leq \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.2649.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right)\ /;\ \text{Im}(z) < 0$$

01.14.27.2650.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\,\text{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right) - \pi\ /;\ (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2651.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{1}{2}\left(\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}-1\right)\pi - 2\sqrt{z}\sqrt{-\frac{1}{z}}\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}+\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z}}\right)$ and $\operatorname{sech}^{-1}\left(\sqrt{2\sqrt{1+z}/\left(\sqrt{1+z}-\sqrt{z}\right)}\right)$

01.14.27.2652.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = 2\,i\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-\sqrt{z}}}\right)+\pi \;/;\; -\pi < \arg(z) \leq 0$$

01.14.27.2653.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \pi - 2\,i\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-\sqrt{z}}}\right) \;/;\; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2654.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = -2\,i\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-\sqrt{z}}}\right) \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2655.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z}{z+1}}\sqrt{\frac{z+1}{z}}+1\right) + \frac{2\sqrt{-z^2}}{z}\operatorname{sech}^{-1}\left(\sqrt{\frac{2\sqrt{1+z}}{\sqrt{1+z}-\sqrt{z}}}\right)$$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$

Involving $\tan^{-1}\left(\sqrt{z-1}\right)$ and $\operatorname{sech}^{-1}\left(\sqrt{z}\right)$

01.14.27.2656.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = i\operatorname{sech}^{-1}\left(\sqrt{z}\right) \;/;\; 0 < \arg(z) \leq \pi \lor (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2657.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = -i\operatorname{sech}^{-1}\left(\sqrt{z}\right) \;/;\; -\pi < \arg(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2658.01

$$\tan^{-1}\left(\sqrt{z-1}\right) = \frac{\sqrt{z-1}}{\sqrt{1-z}}\operatorname{sech}^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right)$ and $\operatorname{sech}^{-1}\left(\sqrt{z}\right)$

01.14.27.2659.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{\pi}{2} - i\,\mathrm{sech}^{-1}\left(\sqrt{z}\right) /; 0 < \arg(z) \leq \pi$$

01.14.27.2660.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = i\,\mathrm{sech}^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2} /; -\pi < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.2661.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = -i\,\mathrm{sech}^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2662.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z-1}}\right) = \frac{1}{2}\pi\sqrt{\frac{z}{z-1}}\sqrt{\frac{z-1}{z}} - \frac{\sqrt{z-1}}{\sqrt{1-z}}\,\mathrm{sech}^{-1}\left(\sqrt{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right)$ and $\mathrm{sech}^{-1}\left(\sqrt{z}\right)$

01.14.27.2663.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \frac{\pi}{2} - i\,\mathrm{sech}^{-1}\left(\sqrt{z}\right) /; 0 < \arg(z) < \pi$$

01.14.27.2664.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = i\,\mathrm{sech}^{-1}\left(\sqrt{z}\right) + \frac{\pi}{2} /; -\pi < \arg(z) \leq 0$$

01.14.27.2665.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = i\,\mathrm{sech}^{-1}\left(\sqrt{z}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z < 0)$$

01.14.27.2666.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z-1}}\right) = \sqrt{1-z}\sqrt{\frac{1}{z-1}}\,\mathrm{sech}^{-1}\left(\sqrt{z}\right) - \frac{\pi\sqrt{-z}\sqrt{1-z}}{2\sqrt{z}}\sqrt{\frac{1}{z-1}}$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$ and $\mathrm{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.2667.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = i\,\mathrm{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ -\pi < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.2668.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = -i\,\mathrm{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ \mathrm{Im}(z) > 0 \lor (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2669.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = -i\,\mathrm{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) - \pi /;\ (z \in \mathbb{R} \land z < 0)$$

01.14.27.2670.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = \frac{1}{2}\pi\left(\sqrt{z}\sqrt{\frac{1}{z}} - 1\right) - \frac{\sqrt{z-1}}{\sqrt{1-z}}\,\mathrm{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right)$ and $\mathrm{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.2671.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = i\,\mathrm{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\ -\pi < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.2672.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = -i\,\mathrm{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\ 0 < \arg(z) \le \pi \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2673.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z}}\right) = -\frac{\sqrt{z-1}}{\sqrt{1-z}}\,\mathrm{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$ and $\mathrm{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.2674.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = i\,\mathrm{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ \mathrm{Im}(z) > 0$$

01.14.27.2675.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = -i\,\mathrm{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ -\pi < \arg(z) \le 0$$

01.14.27.2676.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = i\,\text{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) + \pi \;/;\; (z \in \mathbb{R} \land z < 0)$$

01.14.27.2677.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \frac{1}{2}\pi\left(1 - \sqrt{z}\,\sqrt{\frac{1}{z}}\right) + \frac{\sqrt{z}}{\sqrt{-z}}\,\text{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right)$ and $\text{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.2678.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = i\,\text{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) \;/;\; 0 < \arg(z) \leq \pi$$

01.14.27.2679.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = -i\,\text{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) \;/;\; -\pi < \arg(z) \leq 0$$

01.14.27.2680.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z}}\right) = \frac{\sqrt{z}}{\sqrt{-z}}\,\text{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$ and $\text{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.2681.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = -i\,\text{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) \;/;\; 0 < \arg(z) < \pi \lor (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2682.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = i\,\text{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) \;/;\; \text{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2683.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = i\,\text{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) + \pi \;/;\; (z \in \mathbb{R} \land z < 0)$$

01.14.27.2684.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = \frac{1}{2}\pi\left(1 - \sqrt{z}\,\sqrt{\frac{1}{z}}\right) - \frac{\sqrt{z-1}\,\sqrt{z}}{\sqrt{1-z}}\,\sqrt{\frac{1}{z}}\,\text{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right)$ and $\operatorname{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.2685.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = -i\operatorname{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\ 0 < \arg(z) < \pi \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2686.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = i\operatorname{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\ \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1) \lor (z \in \mathbb{R} \land z < 0)$$

01.14.27.2687.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{z}}\right) = -\frac{\sqrt{z-1}\sqrt{z}}{\sqrt{1-z}}\sqrt{\frac{1}{z}}\operatorname{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$ and $\operatorname{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.2688.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{\pi}{2} + i\operatorname{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ 0 < \arg(z) \leq \pi \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2689.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{\pi}{2} - i\operatorname{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ \operatorname{Im}(z) < 0$$

01.14.27.2690.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = -\frac{\pi}{2} - i\operatorname{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) /;\ (z \in \mathbb{R} \land z > 1)$$

01.14.27.2691.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{1}{2}\pi\sqrt{1-z}\sqrt{\frac{1}{1-z}} + \frac{\sqrt{z-1}}{\sqrt{1-z}}\operatorname{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right)$ and $\operatorname{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.2692.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{\pi}{2} + i\operatorname{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\ 0 < \arg(z) < \pi \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2693.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{\pi}{2} - i\,\mathrm{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\ \mathrm{Im}(z) < 0$$

01.14.27.2694.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = -\frac{\pi}{2} - i\,\mathrm{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) /;\ (z \in \mathbb{R} \land z > 1)$$

01.14.27.2695.01

$$\tan^{-1}\left(\frac{\sqrt{z}}{\sqrt{1-z}}\right) = \frac{1}{2}\pi\left(\sqrt{\frac{1}{1-z}}\sqrt{1-z} + \sqrt{\frac{1}{z}}\sqrt{z} - 1\right) + \frac{\sqrt{z-1}}{\sqrt{1-z}}\,\mathrm{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$ and $\mathrm{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.2696.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = -i\,\mathrm{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2} /;\ 0 < \arg(z) \leq \pi$$

01.14.27.2697.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = i\,\mathrm{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi}{2} /;\ \mathrm{Im}(z) < 0$$

01.14.27.2698.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = i\,\mathrm{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) + \frac{\pi}{2} /;\ (z \in \mathbb{R} \land z > 0)$$

01.14.27.2699.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\sqrt{-z}}{\sqrt{z}}\,\mathrm{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) - \frac{\pi\sqrt{-z}}{2}\sqrt{-\frac{1}{z}}$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right)$ and $\mathrm{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.2700.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = -i\,\mathrm{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} /;\ 0 < \arg(z) < \pi$$

01.14.27.2701.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = i\,\mathrm{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2} /;\ \mathrm{Im}(z) < 0$$

01.14.27.2702.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = i\,\text{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z > 0)$$

01.14.27.2703.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = -i\,\text{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z < 0)$$

01.14.27.2704.01

$$\tan^{-1}\left(\frac{\sqrt{-z}}{\sqrt{z-1}}\right) = \frac{\sqrt{-z}}{\sqrt{z}}\,\text{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) - \frac{\pi}{2}\sqrt{-z^2}\sqrt{-\frac{1}{z^2}}$$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$ and $\text{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right)$

01.14.27.2705.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2} + i\,\text{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) \;/;\; \text{Im}(z) \ge 0$$

01.14.27.2706.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2} - i\,\text{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) \;/;\; \text{Im}(z) < 0$$

01.14.27.2707.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \sqrt{-\frac{1}{z}}\sqrt{z}\,\text{sech}^{-1}\left(\frac{1}{\sqrt{z}}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right)$ and $\text{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right)$

01.14.27.2708.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2} + i\,\text{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) \;/;\; 0 \le \arg(z) < \pi$$

01.14.27.2709.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \frac{\pi}{2} - i\,\text{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) \;/;\; \text{Im}(z) < 0$$

01.14.27.2710.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = -\frac{\pi}{2} + i\,\text{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) \;/;\; (z \in \mathbb{R} \land z < 0)$$

01.14.27.2711.01

$$\tan^{-1}\left(\sqrt{\frac{z}{1-z}}\right) = \sqrt{-\frac{1}{z}}\sqrt{z}\,\operatorname{sech}^{-1}\left(\sqrt{\frac{1}{z}}\right) + \frac{\pi}{2}\sqrt{z}\sqrt{\frac{1}{z}}$$

Involving $\tan^{-1}\left(\frac{\sqrt{1+c\,z}}{\sqrt{1-c\,z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1+z}}{\sqrt{1-z}}\right)$ and $\operatorname{sech}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2712.01

$$\tan^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{1-z}}\right) = \frac{\pi}{2} - \frac{1}{2}\,i\operatorname{sech}^{-1}\left(\frac{1}{z}\right) /; \operatorname{Im}(z) < 0$$

01.14.27.2713.01

$$\tan^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{1-z}}\right) = \frac{i}{2}\operatorname{sech}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} /; 0 < \arg(z) \le \pi \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2714.01

$$\tan^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{1-z}}\right) = -\frac{i}{2}\operatorname{sech}^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.2715.01

$$\tan^{-1}\left(\frac{\sqrt{z+1}}{\sqrt{1-z}}\right) = \frac{\sqrt{z-1}}{2\sqrt{1-z}}\operatorname{sech}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2}\sqrt{\frac{1}{1-z}}\sqrt{1-z}$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{1+z}}\right)$ and $\operatorname{sech}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2716.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z+1}}\right) = \frac{i}{2}\operatorname{sech}^{-1}\left(\frac{1}{z}\right) /; \operatorname{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2717.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z+1}}\right) = -\frac{i}{2}\operatorname{sech}^{-1}\left(\frac{1}{z}\right) /; \operatorname{Im}(z) > 0 \lor (z \in \mathbb{R} \land -1 < z < 1)$$

01.14.27.2718.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z+1}}\right) = -\frac{i}{2}\operatorname{sech}^{-1}\left(\frac{1}{z}\right) - \pi /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.2719.01

$$\tan^{-1}\left(\frac{\sqrt{1-z}}{\sqrt{z+1}}\right) = \frac{\pi}{2}\left(\sqrt{z+1}\sqrt{\frac{1}{z+1}} - 1\right) + \frac{\sqrt{1-z}}{2\sqrt{z-1}}\operatorname{sech}^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-1+c\,z}}{\sqrt{-1-c\,z}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-1-z}}{\sqrt{z-1}}\right)$ and $\text{sech}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2720.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{1}{2}\, i\, \text{sech}^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; \text{Im}(z) < 0$$

01.14.27.2721.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = -\frac{i}{2}\, \text{sech}^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; \text{Im}(z) > 0 \lor (z \in \mathbb{R} \land z < -1)$$

01.14.27.2722.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{1}{2}\, i\, \text{sech}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; (z \in \mathbb{R} \land z > -1)$$

01.14.27.2723.01

$$\tan^{-1}\left(\frac{\sqrt{-z-1}}{\sqrt{z-1}}\right) = \frac{\sqrt{-z-1}}{2\sqrt{z+1}}\, \text{sech}^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2}\sqrt{-z-1}\,\sqrt{-\frac{1}{z+1}}$$

Involving $\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right)$ and $\text{sech}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2724.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{i}{2}\, \text{sech}^{-1}\left(\frac{1}{z}\right) \;/;\; \text{Im}(z) > 0$$

01.14.27.2725.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = -\frac{i}{2}\, \text{sech}^{-1}\left(\frac{1}{z}\right) \;/;\; -\pi < \arg(z) \leq 0 \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2726.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{i}{2}\, \text{sech}^{-1}\left(\frac{1}{z}\right) + \pi \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.2727.01

$$\tan^{-1}\left(\frac{\sqrt{z-1}}{\sqrt{-z-1}}\right) = \frac{\sqrt{z+1}}{2\sqrt{-z-1}}\, \text{sech}^{-1}\left(\frac{1}{z}\right) - \frac{1}{2}\left(\sqrt{\frac{1}{z+1}}\,\sqrt{z+1} - 1\right)\pi$$

Involving $\tan^{-1}\left(\sqrt{\frac{1+c\,z}{1-c\,z}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right)$ and $\text{sech}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2728.01

$$\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right) = \frac{1}{2}\,i\,\text{sech}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; \text{Im}(z) \geq 0$$

01.14.27.2729.01

$$\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right) = -\frac{1}{2}\,i\,\text{sech}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; \text{Im}(z) < 0$$

01.14.27.2730.01

$$\tan^{-1}\left(\sqrt{\frac{1+z}{1-z}}\right) = \frac{1}{2}\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\text{sech}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2}$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right)$ and $\text{sech}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2731.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = \frac{i}{2}\,\text{sech}^{-1}\left(\frac{1}{z}\right) \;/;\; \text{Im}(z) < 0 \lor (z \in \mathbb{R} \land z > 1)$$

01.14.27.2732.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = -\frac{i}{2}\,\text{sech}^{-1}\left(\frac{1}{z}\right) \;/;\; \text{Im}(z) > 0 \lor (z \in \mathbb{R} \land -1 < z < 1)$$

01.14.27.2733.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = \frac{i}{2}\,\text{sech}^{-1}\left(\frac{1}{z}\right) + \pi \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.2734.01

$$\tan^{-1}\left(\sqrt{\frac{1-z}{1+z}}\right) = -\frac{\pi}{2}\left(\sqrt{\frac{1}{z+1}}\,\sqrt{z+1} - 1\right) - \frac{1}{2}\sqrt{\frac{1}{1-z}}\,\sqrt{1-z}\,\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}\,\sqrt{-\frac{1}{z}}\,\sqrt{z}\,\text{sech}^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{z^2-1}\right)$

Involving $\tan^{-1}\left(\sqrt{z^2-1}\right)$ and $\text{sech}^{-1}(z)$

01.14.27.2735.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = i\,\text{sech}^{-1}(z) \;/;\; 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2736.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = -i\,\text{sech}^{-1}(z) \;/;\; -\frac{\pi}{2} < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.2737.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = \pi - i\,\text{sech}^{-1}(z) \;/;\; \frac{\pi}{2} < \arg(z) < \pi$$

01.14.27.2738.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = i\,\text{sech}^{-1}(z) + \pi \;/;\; -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.2739.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = i\,\text{sech}^{-1}(z) + \pi \;/;\; -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.2740.01

$$\tan^{-1}\left(\sqrt{z^2-1}\right) = \frac{\pi}{2}\left(1 - \frac{\sqrt{z^2}}{z}\right) + \frac{\sqrt{z-1}\,\sqrt{z^2}}{\sqrt{1-z}\,\sqrt{z}}\sqrt{\frac{1}{z}}\,\text{sech}^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right)$ and $\text{sech}^{-1}(z)$

01.14.27.2741.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \frac{\pi}{2} - i\,\text{sech}^{-1}(z) \;/;\; 0 < \arg(z) \leq \frac{\pi}{2}$$

01.14.27.2742.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = i\,\text{sech}^{-1}(z) + \frac{\pi}{2} \;/;\; -\frac{\pi}{2} < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.2743.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = i\,\text{sech}^{-1}(z) - \frac{\pi}{2} \;/;\; \frac{\pi}{2} < \arg(z) < \pi$$

01.14.27.2744.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = -i\,\text{sech}^{-1}(z) - \frac{\pi}{2} \;/;\; -\pi < \arg(z) \leq -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1) \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2745.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = -i\,\text{sech}^{-1}(z) - \frac{3\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2746.01

$$\tan^{-1}\left(\frac{1}{\sqrt{z^2-1}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{z+1}{z-1}}\,\sqrt{\frac{z-1}{z+1}} + \frac{\sqrt{z^2}}{z} - 1\right) - \frac{\sqrt{z-1}\,\sqrt{z^2}}{\sqrt{1-z}\,\sqrt{z}}\sqrt{\frac{1}{z}}\,\text{sech}^{-1}(z)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right)$ and $\text{sech}^{-1}(z)$

01.14.27.2747.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \frac{\pi}{2} - i\,\text{sech}^{-1}(z) \;/;\; 0 < \arg(z) < \frac{\pi}{2}$$

01.14.27.2748.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = i\,\text{sech}^{-1}(z) + \frac{\pi}{2} \;/;\; -\frac{\pi}{2} \leq \arg(z) \leq 0$$

01.14.27.2749.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = i\,\text{sech}^{-1}(z) - \frac{\pi}{2} \;/;\; \frac{\pi}{2} \leq \arg(z) < \pi$$

01.14.27.2750.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = -i\,\text{sech}^{-1}(z) - \frac{\pi}{2} \;/;\; -\pi < \arg(z) < -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.2751.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = i\,\text{sech}^{-1}(z) + \frac{3\pi}{2} \;/;\; (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2752.01

$$\tan^{-1}\left(\sqrt{\frac{1}{z^2-1}}\right) = \frac{1}{2}\sqrt{\frac{1}{z^2-1}}\sqrt{z^2-1}\left(\sqrt{\frac{z+1}{z-1}}\sqrt{\frac{z-1}{z+1}} + \frac{\sqrt{z^2}}{z} - 1\right)\pi - \sqrt{-z-1}\sqrt{-\frac{1}{z^4}}\,z^2\sqrt{-\frac{1}{z+1}}\,\text{sech}^{-1}(z)$$

Involving $\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)$

Involving $\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right)$ and $\text{sech}^{-1}(z)$

01.14.27.2753.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = i\,\text{sech}^{-1}(z) \;/;\; 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2754.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = -i\,\mathrm{sech}^{-1}(z) /; -\frac{\pi}{2} < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.2755.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = i\,\mathrm{sech}^{-1}(z) - \pi /; \frac{\pi}{2} < \arg(z) < \pi$$

01.14.27.2756.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = -i\,\mathrm{sech}^{-1}(z) - \pi /; -\pi < \arg(z) \le -\frac{\pi}{2} \bigvee (z \in \mathbb{R} \land z < 0)$$

01.14.27.2757.01

$$\tan^{-1}\left(z\sqrt{\frac{z^2-1}{z^2}}\right) = \frac{\pi}{2}\left(\frac{\sqrt{z^2}}{z} - 1\right) + \frac{1}{\sqrt{\frac{1}{z}-1}}\sqrt{1-\frac{1}{z}}\,\mathrm{sech}^{-1}(z)$$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right)$ and $\mathrm{sech}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2758.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = i\,\mathrm{sech}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} /; \mathrm{Im}(z) > 0 \lor (z \in \mathbb{R} \land -1 < z < 1)$$

01.14.27.2759.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = -i\,\mathrm{sech}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} /; \mathrm{Im}(z) < 0$$

01.14.27.2760.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = -i\,\mathrm{sech}^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} /; (z \in \mathbb{R} \land z > 1)$$

01.14.27.2761.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) = i\,\mathrm{sech}^{-1}\left(\frac{1}{z}\right) + \frac{3\pi}{2} /; (z \in \mathbb{R} \land z < -1)$$

01.14.27.2762.01

$$\tan^{-1}\left(\frac{z}{\sqrt{1-z^2}}\right) == \frac{\pi}{2}\left(-\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}+\sqrt{\frac{1}{1-z}}\,\sqrt{1-z}+1\right)-\frac{\sqrt{1-z}}{\sqrt{z-1}}\operatorname{sech}^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right)$ and $\operatorname{sech}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2763.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) == i\operatorname{sech}^{-1}\left(\frac{1}{z}\right)+\frac{\pi}{2} \;/;\; 0<\arg(z)\leq\frac{\pi}{2}\bigvee(z\in\mathbb{R}\land 0<z<1)$$

01.14.27.2764.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) == \frac{\pi}{2}-i\operatorname{sech}^{-1}\left(\frac{1}{z}\right) \;/;\; -\frac{\pi}{2}<\arg(z)<0$$

01.14.27.2765.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) == -i\operatorname{sech}^{-1}\left(\frac{1}{z}\right)-\frac{\pi}{2} \;/;\; \frac{\pi}{2}<\arg(z)<\pi\bigvee(z\in\mathbb{R}\land z>1)\bigvee(z\in\mathbb{R}\land -1<z<0)$$

01.14.27.2766.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) == i\operatorname{sech}^{-1}\left(\frac{1}{z}\right)-\frac{\pi}{2} \;/;\; -\pi<\arg(z)\leq-\frac{\pi}{2}$$

01.14.27.2767.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) == -i\operatorname{sech}^{-1}\left(\frac{1}{z}\right)-\frac{3\pi}{2} \;/;\; (z\in\mathbb{R}\land z<-1)$$

01.14.27.2768.01

$$\tan^{-1}\left(\frac{\sqrt{z^2}}{\sqrt{1-z^2}}\right) == \frac{\pi\sqrt{z^2}}{2z}\left(-\sqrt{\frac{1}{z+1}}\,\sqrt{z+1}+\sqrt{\frac{1}{1-z}}\,\sqrt{1-z}+1\right)+\frac{\sqrt{z-1}\,z}{\sqrt{1-z}\,\sqrt{z^2}}\operatorname{sech}^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right)$ and $\operatorname{sech}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2769.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = -i\,\operatorname{sech}^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; 0 < \arg(z) \leq \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2770.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = -\frac{\pi}{2} + i\,\operatorname{sech}^{-1}\left(\frac{1}{z}\right) \;/;\; -\frac{\pi}{2} < \arg(z) < 0$$

01.14.27.2771.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = i\,\operatorname{sech}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; \frac{\pi}{2} < \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z > 0)$$

01.14.27.2772.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = -i\,\operatorname{sech}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.2773.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = i\,\operatorname{sech}^{-1}\left(\frac{1}{z}\right) + \frac{3\pi}{2} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.2774.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2}}{\sqrt{z^2-1}}\right) = \frac{\pi z\sqrt{z^2-1}}{2\sqrt{-z^2}\sqrt{1-z^2}}\left(-\sqrt{\frac{1}{z+1}}\sqrt{z+1} + \sqrt{\frac{1}{1-z}}\sqrt{1-z} + 1\right) - \frac{\sqrt{z}\sqrt{z^2-1}}{\sqrt{-z}\sqrt{z-1}\sqrt{z+1}}\operatorname{sech}^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right)$ and $\operatorname{sech}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2775.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = i\,\operatorname{sech}^{-1}\left(\frac{1}{z}\right) + \frac{\pi}{2} \;/;\; 0 \leq \arg(z) \leq \frac{\pi}{2}$$

01.14.27.2776.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \frac{\pi}{2} - i\,\operatorname{sech}^{-1}\left(\frac{1}{z}\right) \;/;\; -\frac{\pi}{2} < \arg(z) < 0$$

01.14.27.2777.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = -i\,\text{sech}^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; \frac{\pi}{2} < \arg(z) < \pi \bigvee (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2778.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = i\,\text{sech}^{-1}\left(\frac{1}{z}\right) - \frac{\pi}{2} \;/;\; -\pi < \arg(z) \leq -\frac{\pi}{2}$$

01.14.27.2779.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = i\,\text{sech}^{-1}\left(\frac{1}{z}\right) + \frac{3\pi}{2} \;/;\; (z \in \mathbb{R} \land z < -1)$$

01.14.27.2780.01

$$\tan^{-1}\left(\sqrt{\frac{z^2}{1-z^2}}\right) = \frac{\pi\sqrt{1-z^2}}{2z}\sqrt{\frac{z^2}{1-z^2}}\left(-\sqrt{\frac{1}{z+1}}\sqrt{z+1} + \sqrt{\frac{1}{1-z}}\sqrt{1-z} + 1\right) + \frac{\sqrt{z-1}\sqrt{z+1}}{z}\sqrt{\frac{z^2}{1-z^2}}\,\text{sech}^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right)$ and $\text{sech}^{-1}\left(-\frac{i}{z}\right)$

01.14.27.0039.01

$$\tan^{-1}\left(\frac{\sqrt{-z^2-1}}{z}\right) = \frac{\sqrt{-z^2-1}}{2\sqrt{z^2+1}}\left(\frac{2\,i\sqrt{1-i\,z}}{\sqrt{i\,z-1}}\,\text{sech}^{-1}\left(-\frac{i}{z}\right) - \pi\left(i + \sqrt{-\frac{1}{z^2}}\,z\right)\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right)$ and $\text{sech}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2781.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = -i\,\text{sech}^{-1}\left(\frac{1}{z}\right) \;/;\; 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1) \bigvee (i\,z \in \mathbb{R} \land i\,z > 0)$$

01.14.27.2782.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = i\,\text{sech}^{-1}\left(\frac{1}{z}\right) /;\ -\frac{\pi}{2} < \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.2783.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = -i\,\text{sech}^{-1}\left(\frac{1}{z}\right) - \pi /;\ (i\,z \in \mathbb{R} \land i\,z < 0)$$

01.14.27.2784.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = i\,\text{sech}^{-1}\left(\frac{1}{z}\right) + \pi /;\ \frac{\pi}{2} < \arg(z) \leq \pi$$

01.14.27.2785.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = -i\,\text{sech}^{-1}\left(\frac{1}{z}\right) + \pi /;\ -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.2786.01

$$\tan^{-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{z^2}}\right) = \frac{\pi}{2}\left(\sqrt{\frac{1}{z^2}}\,\sqrt{z^2} - \frac{\sqrt{z^2}}{z}\right) + \frac{z\sqrt{1-z}}{\sqrt{z^2}\,\sqrt{z-1}}\,\text{sech}^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right)$

Involving $\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right)$ and $\text{sech}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2787.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = i\,\text{sech}^{-1}\left(\frac{1}{z}\right) /;\ 0 < \arg(z) < \frac{\pi}{2} \bigvee (i\,z \in \mathbb{R} \land i\,z > 0)$$

01.14.27.2788.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = -i\,\text{sech}^{-1}\left(\frac{1}{z}\right) /;\ -\frac{\pi}{2} < \arg(z) \leq 0$$

01.14.27.2789.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = i\,\text{sech}^{-1}\left(\frac{1}{z}\right) + \pi /;\ (i\,z \in \mathbb{R} \land i\,z < 0) \lor (z \in \mathbb{R} \land -1 < z < 0)$$

01.14.27.2790.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = -i\,\text{sech}^{-1}\left(\frac{1}{z}\right) - \pi /;\ \frac{\pi}{2} < \arg(z) < \pi \bigvee (z \in \mathbb{R} \land z < -1)$$

01.14.27.2791.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = i\,\operatorname{sech}^{-1}\left(\frac{1}{z}\right) - \pi \;/;\; -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.2792.01

$$\tan^{-1}\left(\frac{\sqrt{z^2-1}}{\sqrt{-z^2}}\right) = \frac{\pi\, z\, \sqrt{z^2-1}}{2\left(\sqrt{-z^2}\,\sqrt{1-z^2}\right)}\left(\sqrt{\frac{1}{z^2}}\, z - 1\right) + \frac{\sqrt{z}\,\sqrt{z^2-1}}{\sqrt{z-1}\,\sqrt{z+1}\,\sqrt{-z}} \operatorname{sech}^{-1}\left(\frac{1}{z}\right)$$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right)$

Involving $\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right)$ and $\operatorname{sech}^{-1}\left(\frac{1}{z}\right)$

01.14.27.2793.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = -i\,\operatorname{sech}^{-1}\left(\frac{1}{z}\right) \;/;\; 0 < \arg(z) < \frac{\pi}{2} \bigvee (z \in \mathbb{R} \land 0 < z < 1)$$

01.14.27.2794.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = i\,\operatorname{sech}^{-1}\left(\frac{1}{z}\right) \;/;\; -\frac{\pi}{2} \le \arg(z) < 0 \bigvee (z \in \mathbb{R} \land z > 1)$$

01.14.27.2795.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = i\,\operatorname{sech}^{-1}\left(\frac{1}{z}\right) + \pi \;/;\; \frac{\pi}{2} \le \arg(z) \le \pi$$

01.14.27.2796.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = -i\,\operatorname{sech}^{-1}\left(\frac{1}{z}\right) + \pi \;/;\; -\pi < \arg(z) < -\frac{\pi}{2}$$

01.14.27.2797.01

$$\tan^{-1}\left(\sqrt{\frac{1-z^2}{z^2}}\right) = \frac{\pi}{2}\left(1 - z\sqrt{\frac{1}{z^2}}\right) + \frac{z\sqrt{1-z}}{\sqrt{z-1}}\sqrt{\frac{1}{z^2}}\operatorname{sech}^{-1}\left(\frac{1}{z}\right)$$

Inequalities

01.14.29.0001.01

$$\left|\tan^{-1}(x)\right| < \frac{\pi}{2} \;/;\; x \in \mathbb{R}$$

Zeros

01.14.30.0001.01

$\tan^{-1}(z) == 0 /; z == 0$

History

– J. Gregory (1671) found a series representation for arctan

- G. W. Leibniz (1674, 1682) rediscovered a series representation for arctan

– Joh. Bernoulli (1702) interpreted $\tan^{-1}$ as the corresponding Log expression

– L. Euler (1736); J. Herschel (1813)

The function $\tan^{-1}$ is encountered often in mathematics and the natural sciences.

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