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Notations

Traditional name

Exponential function

Traditional notation

$\exp(z) = e^z$

Mathematica StandardForm notation

Exp[z]

Primary definition

01.03.02.0001.01

$\exp(z) = e^z$

The function e^z (read as the exponential function) is defined for all z. It presents the zth power of the Euler number $e \approx 2.71828$.

Specific values

Specialized values

01.03.03.0001.01

$e^{2\pi i m} = 1 /; m \in \mathbb{Z}$

01.03.03.0002.01

$e^{\pi i m} = (-1)^m /; m \in \mathbb{Z}$

Values at fixed points

01.03.03.0003.01

$e^0 = 1$

01.03.03.0004.01

$$e^{\frac{\pi i}{12}} = \frac{\sqrt{2}+\sqrt{6}}{4} + \frac{i\left(\sqrt{3}-1\right)}{2\sqrt{2}}$$

01.03.03.0005.01

$$e^{\frac{i\pi}{12}} = \left(z; z^8 - z^4 + 1\right)_8^{-1}$$

01.03.03.0006.01

$$e^{\frac{i\pi}{12}} == \sqrt[12]{-1}$$

01.03.03.0007.01

$$e^{\frac{\pi i}{10}} == \frac{1}{2}\sqrt{\frac{5+\sqrt{5}}{2}} + \frac{i}{4}\left(\sqrt{5}-1\right)$$

01.03.03.0008.01

$$e^{\frac{i\pi}{10}} == \left(z; z^8 - z^6 + z^4 - z^2 + 1\right)_8^{-1}$$

01.03.03.0009.01

$$e^{\frac{i\pi}{10}} == \sqrt[10]{-1}$$

01.03.03.0010.01

$$e^{\frac{i\pi}{9}} == -\left(\frac{-1-i\sqrt{3}}{2}\right)^{4/3}$$

01.03.03.0011.01

$$e^{\frac{i\pi}{9}} == \left(z; z^6 - z^3 + 1\right)_6^{-1}$$

01.03.03.0012.01

$$e^{\frac{i\pi}{9}} == \sqrt[9]{-1}$$

01.03.03.0013.01

$$e^{\frac{\pi i}{8}} == \frac{\sqrt{2+\sqrt{2}}}{2} + \frac{i}{2}\sqrt{2-\sqrt{2}}$$

01.03.03.0014.01

$$e^{\frac{i\pi}{8}} == \left(z; z^8 + 1\right)_8^{-1}$$

01.03.03.0015.01

$$e^{\frac{i\pi}{8}} == \sqrt[8]{-1}$$

01.03.03.0016.01

$$e^{\frac{i\pi}{7}} == \left(\left(2-2i\sqrt{7}\right)\sqrt[3]{14-i\sqrt{7}-3\sqrt{21}} + \left(1+i\sqrt{3}\right)\left(28-2i\sqrt{7}-6\sqrt{21}\right)^{2/3} + 2\sqrt[3]{2}\sqrt{7}\left(i+\sqrt{3}\right)\right) \Big/ \left(12\sqrt[3]{14-i\sqrt{7}-3\sqrt{21}}\right)$$

01.03.03.0017.01

$$e^{\frac{i\pi}{7}} == \left(z; z^6 - z^5 + z^4 - z^3 + z^2 - z + 1\right)_6^{-1}$$

01.03.03.0018.01

$$e^{\frac{i\pi}{7}} == \sqrt[7]{-1}$$

01.03.03.0019.01

$$e^{\frac{\pi i}{6}} == \frac{\sqrt{3}+i}{2}$$

01.03.03.0020.01

$$e^{\frac{i\pi}{6}} = \left(z;\, z^4 - z^2 + 1\right)_4^{-1}$$

01.03.03.0021.01

$$e^{\frac{i\pi}{6}} = \sqrt[6]{-1}$$

01.03.03.0022.01

$$e^{\frac{\pi i}{5}} = \frac{1+\sqrt{5}}{4} + \frac{i}{2}\sqrt{\frac{5-\sqrt{5}}{2}}$$

01.03.03.0023.01

$$e^{\frac{i\pi}{5}} = \left(z;\, z^4 - z^3 + z^2 - z + 1\right)_4^{-1}$$

01.03.03.0024.01

$$e^{\frac{i\pi}{5}} = \sqrt[5]{-1}$$

01.03.03.0025.01

$$e^{\frac{2\pi i}{9}} = \sqrt[3]{\frac{1}{2}\, i\left(i + \sqrt{3}\right)}$$

01.03.03.0026.01

$$e^{\frac{2\pi i}{9}} = \left(z;\, z^6 + z^3 + 1\right)_6^{-1}$$

01.03.03.0027.01

$$e^{\frac{2\pi i}{9}} = (-1)^{2/9}$$

01.03.03.0028.01

$$e^{\frac{\pi i}{4}} = \frac{1+i}{\sqrt{2}}$$

01.03.03.0029.01

$$e^{\frac{i\pi}{4}} = \left(z;\, z^4 + 1\right)_4^{-1}$$

01.03.03.0030.01

$$e^{\frac{i\pi}{4}} = \sqrt[4]{-1}$$

01.03.03.0031.01

$$e^{\frac{2\pi i}{7}} = \frac{1}{24\sqrt[3]{-364 - 84\, i\sqrt{3}}} \Big(28\; 2^{2/3}\sqrt[3]{1 - 3\, i\sqrt{3}} + 4\; 7^{2/3}\left(1 - 3\, i\sqrt{3}\right) - 4\sqrt[3]{-364 - 84\, i\sqrt{3}} - 2\, i\sqrt{7}\sqrt[3]{2\left(1 - 3\, i\sqrt{3}\right)\left(14 + i\sqrt{7} + 3\sqrt{21}\right)} +$$
$$2\sqrt{21}\sqrt[3]{2\left(1 - 3\, i\sqrt{3}\right)\left(14 + i\sqrt{7} + 3\sqrt{21}\right)} - 2\left(14 - i\sqrt{7} - 3\sqrt{21}\right)^{2/3}\sqrt[3]{7 - 21\, i\sqrt{3} - 13\, i\sqrt{7} + 3\sqrt{21}} -$$
$$4\sqrt[3]{7 - 21\, i\sqrt{3} + 13\, i\sqrt{7} - 3\sqrt{21}}\left(14 + i\sqrt{7} + 3\sqrt{21}\right)^{2/3} + 4\sqrt{7}\sqrt[3]{-364 - 84\, i\sqrt{3}}\; i + 4\sqrt{7}$$
$$\sqrt[3]{28 - 84\, i\sqrt{3} + 52\, i\sqrt{7} - 12\sqrt{21}}\; i + 2\sqrt{3}\sqrt[3]{7 - 21\, i\sqrt{3} - 13\, i\sqrt{7} + 3\sqrt{21}}\left(14 - i\sqrt{7} - 3\sqrt{21}\right)^{2/3} i\Big)$$

01.03.03.0032.01

$$e^{\frac{2\pi i}{7}} == \left(z;\, z^6+z^5+z^4+z^3+z^2+z+1\right)_6^{-1}$$

01.03.03.0033.01

$$e^{\frac{2\pi i}{7}} == (-1)^{2/7}$$

01.03.03.0034.01

$$e^{\frac{3\pi i}{10}} == \frac{1}{2}\sqrt{\frac{5-\sqrt{5}}{2}} + \frac{i}{4}\left(1+\sqrt{5}\right)$$

01.03.03.0035.01

$$e^{\frac{3\pi i}{10}} == \left(z;\, z^8-z^6+z^4-z^2+1\right)_6^{-1}$$

01.03.03.0036.01

$$e^{\frac{3\pi i}{10}} == (-1)^{3/10}$$

01.03.03.0037.01

$$e^{\frac{\pi i}{3}} == \frac{1+i\sqrt{3}}{2}$$

01.03.03.0038.01

$$e^{\frac{i\pi}{3}} == \sqrt[3]{-1}$$

01.03.03.0039.01

$$e^{\frac{3\pi i}{8}} == \frac{\sqrt{2-\sqrt{2}}}{2} + \frac{i}{2}\sqrt{2+\sqrt{2}}$$

01.03.03.0040.01

$$e^{\frac{3\pi i}{8}} == \left(z;\, z^8+1\right)_6^{-1}$$

01.03.03.0041.01

$$e^{\frac{3\pi i}{8}} == (-1)^{3/8}$$

01.03.03.0042.01

$$e^{\frac{2\pi i}{5}} == \frac{\sqrt{5}-1}{4} + \frac{i}{2}\sqrt{\frac{5+\sqrt{5}}{2}}$$

01.03.03.0043.01

$$e^{\frac{2\pi i}{5}} == \left(z;\, z^4+z^3+z^2+z+1\right)_4^{-1}$$

01.03.03.0044.01

$$e^{\frac{2\pi i}{5}} == (-1)^{2/5}$$

01.03.03.0045.01

$$e^{\frac{5\pi i}{12}} == \frac{\sqrt{3}-1}{2\sqrt{2}} + \frac{i}{4}\left(\sqrt{2}+\sqrt{6}\right)$$

01.03.03.0046.01

$$e^{\frac{5\pi i}{12}} == \left(z;\, z^8-z^4+1\right)_6^{-1}$$

01.03.03.0047.01

$$e^{\frac{5\pi i}{12}} == (-1)^{5/12}$$

01.03.03.0048.01

$$e^{\frac{3\pi i}{7}} == \left(\left(2+2\,i\,\sqrt{7}\right)\sqrt[3]{14+i\,\sqrt{7}\,+3\,\sqrt{21}}\,+\left(1+i\,\sqrt{3}\right)\left(28+2\,i\,\sqrt{7}\,+6\,\sqrt{21}\right)^{2/3}-2\,\sqrt[3]{2}\,\sqrt{7}\,\left(i+\sqrt{3}\right)\right)\Big/ \left(12\,\sqrt[3]{14+i\,\sqrt{7}\,+3\,\sqrt{21}}\right)$$

01.03.03.0049.01

$$e^{\frac{3\pi i}{7}} == \left(z;\,z^6-z^5+z^4-z^3+z^2-z+1\right)_4^{-1}$$

01.03.03.0050.01

$$e^{\frac{3\pi i}{7}} == (-1)^{3/7}$$

01.03.03.0051.01

$$e^{\frac{4\pi i}{9}} == \frac{-1+i\,\sqrt{3}}{2}\,\sqrt[3]{\frac{-1-i\,\sqrt{3}}{2}}$$

01.03.03.0052.01

$$e^{\frac{4\pi i}{9}} == \left(z;\,z^6+z^3+1\right)_4^{-1}$$

01.03.03.0053.01

$$e^{\frac{4\pi i}{9}} == (-1)^{4/9}$$

01.03.03.0054.01

$$e^{\frac{\pi i}{2}} == i$$

01.03.03.0055.01

$$e^{\frac{5\pi i}{9}} == \frac{1+i\,\sqrt{3}}{2}\,\sqrt[3]{\frac{-1+i\,\sqrt{3}}{2}}$$

01.03.03.0056.01

$$e^{\frac{5\pi i}{9}} == \left(z;\,z^6-z^3+1\right)_4^{-1}$$

01.03.03.0057.01

$$e^{\frac{5\pi i}{9}} == (-1)^{5/9}$$

01.03.03.0058.01

$$e^{\frac{4\pi i}{7}} == \frac{1}{12\sqrt[3]{-364-84\,i\sqrt{3}}}\Big(2\,2^{2/3}\,7^{5/6}\,i\sqrt[3]{-13-3\,i\sqrt{3}} - 2\,2^{2/3}\sqrt[3]{-91-21\,i\sqrt{3}} + \left(14+i\sqrt{7}+3\sqrt{21}\right)^{2/3}\sqrt[3]{7-21\,i\sqrt{3}+13\,i\sqrt{7}-3\sqrt{21}} - i\,2^{2/3}\sqrt{7}\sqrt[3]{7-21\,i\sqrt{3}+13\,i\sqrt{7}-3\sqrt{21}} - 2^{2/3}\sqrt{21}\sqrt[3]{7-21\,i\sqrt{3}+13\,i\sqrt{7}-3\sqrt{21}} + 8\,7^{2/3} + 2\sqrt[3]{7-21\,i\sqrt{3}-13\,i\sqrt{7}+3\sqrt{21}}\left(14-i\sqrt{7}-3\sqrt{21}\right)^{2/3} - 7\,i\,2^{2/3}\sqrt[3]{1-3\,i\sqrt{3}}\left(-i+\sqrt{3}\right) + 2\,2^{2/3}\sqrt{7}\sqrt[3]{7-21\,i\sqrt{3}-13\,i\sqrt{7}+3\sqrt{21}}\;i + \sqrt{3}\left(14+i\sqrt{7}+3\sqrt{21}\right)^{2/3}\sqrt[3]{7-21\,i\sqrt{3}+13\,i\sqrt{7}-3\sqrt{21}}\;i + 4\sqrt{3}\;7^{2/3}\,i\Big)$$

01.03.03.0059.01

$$e^{\frac{4\pi i}{7}} == \left(z;\, z^6+z^5+z^4+z^3+z^2+z+1\right)_4^{-1}$$

01.03.03.0060.01

$$e^{\frac{4\pi i}{7}} == (-1)^{4/7}$$

01.03.03.0061.01

$$e^{\frac{7\pi i}{12}} == -\frac{\sqrt{6}-\sqrt{2}}{4} + \frac{i}{4}\left(\sqrt{2}+\sqrt{6}\right)$$

01.03.03.0062.01

$$e^{\frac{7\pi i}{12}} == \left(z;\, z^8-z^4+1\right)_4^{-1}$$

01.03.03.0063.01

$$e^{\frac{7\pi i}{12}} == (-1)^{7/12}$$

01.03.03.0064.01

$$e^{\frac{3\pi i}{5}} == -\frac{\sqrt{5}-1}{4} + \frac{i}{2}\sqrt{\frac{5+\sqrt{5}}{2}}$$

01.03.03.0065.01

$$e^{\frac{3\pi i}{5}} == \left(z;\, z^4-z^3+z^2-z+1\right)_2^{-1}$$

01.03.03.0066.01

$$e^{\frac{3\pi i}{5}} == (-1)^{3/5}$$

01.03.03.0067.01

$$e^{\frac{5\pi i}{8}} == -\frac{1}{2}\sqrt{2-\sqrt{2}} + \frac{i}{2}\sqrt{2+\sqrt{2}}$$

01.03.03.0068.01

$$e^{\frac{5\pi i}{8}} == \left(z;\, z^8+1\right)_4^{-1}$$

01.03.03.0069.01

$$e^{\frac{5\pi i}{8}} == (-1)^{5/8}$$

01.03.03.0070.01

$$e^{\frac{2\pi i}{3}} == \frac{-1 + i\sqrt{3}}{2}$$

01.03.03.0071.01

$$e^{\frac{2\pi i}{3}} == (-1)^{2/3}$$

01.03.03.0072.01

$$e^{\frac{7\pi i}{10}} == -\frac{1}{2}\sqrt{\frac{5-\sqrt{5}}{2}} + \frac{i}{4}\left(1+\sqrt{5}\right)$$

01.03.03.0073.01

$$e^{\frac{7\pi i}{10}} == \left(z;\, z^8 - z^6 + z^4 - z^2 + 1\right)_4^{-1}$$

01.03.03.0074.01

$$e^{\frac{7\pi i}{10}} == (-1)^{7/10}$$

01.03.03.0075.01

$$e^{\frac{5\pi i}{7}} == \frac{1}{6}\left(-2^{2/3}\sqrt[3]{14 + i\sqrt{7} + 3\sqrt{21}} + \sqrt{7}\, i + \frac{2\sqrt{7}\, i}{\sqrt[3]{7 + \frac{i\sqrt{7}}{2} + \frac{3\sqrt{21}}{2}}} + 1\right)$$

01.03.03.0076.01

$$e^{\frac{5\pi i}{7}} == \left(z;\, z^6 - z^5 + z^4 - z^3 + z^2 - z + 1\right)_2^{-1}$$

01.03.03.0077.01

$$e^{\frac{5\pi i}{7}} == (-1)^{5/7}$$

01.03.03.0078.01

$$e^{\frac{3\pi i}{4}} == \frac{-1 + i}{\sqrt{2}}$$

01.03.03.0079.01

$$e^{\frac{3\pi i}{4}} == \left(z;\, z^4 + 1\right)_2^{-1}$$

01.03.03.0080.01

$$e^{\frac{3\pi i}{4}} == (-1)^{3/4}$$

01.03.03.0081.01

$$e^{\frac{7\pi i}{9}} == -\sqrt[3]{-\frac{1}{2}\, i\left(-i + \sqrt{3}\right)}$$

01.03.03.0082.01

$$e^{\frac{7\pi i}{9}} == \left(z;\, z^6 - z^3 + 1\right)_2^{-1}$$

01.03.03.0083.01

$$e^{\frac{7\pi i}{9}} == (-1)^{7/9}$$

01.03.03.0084.01

$$e^{\frac{4\pi i}{5}} == -\frac{\sqrt{5}+1}{4} + \frac{i}{2}\sqrt{\frac{5-\sqrt{5}}{2}}$$

01.03.03.0085.01

$$e^{\frac{4\pi i}{5}} == \left(z;\, z^4+z^3+z^2+z+1\right)_2^{-1}$$

01.03.03.0086.01

$$e^{\frac{4\pi i}{5}} == (-1)^{4/5}$$

01.03.03.0087.01

$$e^{\frac{5\pi i}{6}} == \frac{-\sqrt{3}+i}{2}$$

01.03.03.0088.01

$$e^{\frac{5\pi i}{6}} == \left(z;\, z^4-z^2+1\right)_2^{-1}$$

01.03.03.0089.01

$$e^{\frac{5\pi i}{6}} == (-1)^{5/6}$$

01.03.03.0090.01

$$e^{\frac{6\pi i}{7}} == \frac{1}{12\sqrt[3]{-364-84\,i\sqrt{3}}} \Bigl(-2\,i\,2^{2/3}\,7^{5/6}\sqrt[3]{-13-3\,i\sqrt{3}} - 2\,2^{2/3}\sqrt[3]{-91-21\,i\sqrt{3}} + 2^{2/3}\sqrt{21}\sqrt[3]{7-21\,i\sqrt{3}-13\,i\sqrt{7}+3\sqrt{21}} - 2^{2/3}\sqrt{21}\sqrt[3]{7-21\,i\sqrt{3}+13\,i\sqrt{7}-3\sqrt{21}} - 10\,7^{2/3} - \sqrt[3]{7-21\,i\sqrt{3}+13\,i\sqrt{7}-3\sqrt{21}}\left(14+i\sqrt{7}+3\sqrt{21}\right)^{2/3} + \sqrt[3]{7-21\,i\sqrt{3}-13\,i\sqrt{7}+3\sqrt{21}}\left(14-i\sqrt{7}-3\sqrt{21}\right)^{2/3} + 7\,2^{2/3}\left(i+\sqrt{3}\right)\sqrt[3]{1-3\,i\sqrt{3}}\,i + 2^{2/3}\sqrt{7}\sqrt[3]{7-21\,i\sqrt{3}-13\,i\sqrt{7}+3\sqrt{21}}\,i + \sqrt{3}\left(14+i\sqrt{7}+3\sqrt{21}\right)^{2/3}\sqrt[3]{7-21\,i\sqrt{3}+13\,i\sqrt{7}-3\sqrt{21}}\,i + 2^{2/3}\sqrt{7}\sqrt[3]{7-21\,i\sqrt{3}+13\,i\sqrt{7}-3\sqrt{21}}\,i + 2\sqrt{3}\,7^{2/3}\,i + \sqrt{3}\sqrt[3]{7-21\,i\sqrt{3}-13\,i\sqrt{7}+3\sqrt{21}}\left(14-i\sqrt{7}-3\sqrt{21}\right)^{2/3}\,i\Bigr)$$

01.03.03.0091.01

$$e^{\frac{6\pi i}{7}} == \left(z;\, z^6+z^5+z^4+z^3+z^2+z+1\right)_2^{-1}$$

01.03.03.0092.01

$$e^{\frac{6\pi i}{7}} == (-1)^{6/7}$$

01.03.03.0093.01

$$e^{\frac{7\pi i}{8}} == -\frac{\sqrt{2+\sqrt{2}}}{2} + \frac{i}{2}\sqrt{2-\sqrt{2}}$$

01.03.03.0094.01

$$e^{\frac{7\pi i}{8}} == \left(z;\, z^8+1\right)_2^{-1}$$

01.03.03.0095.01

$$e^{\frac{7\pi i}{8}} = (-1)^{7/8}$$

01.03.03.0096.01

$$e^{\frac{8\pi i}{9}} = \left(\frac{-1 + i\sqrt{3}}{2}\right)^{4/3}$$

01.03.03.0097.01

$$e^{\frac{8\pi i}{9}} = \left(z; z^6 + z^3 + 1\right)_2^{-1}$$

01.03.03.0098.01

$$e^{\frac{8\pi i}{9}} = (-1)^{8/9}$$

01.03.03.0099.01

$$e^{\frac{9\pi i}{10}} = -\frac{1}{2}\sqrt{\frac{5+\sqrt{5}}{2}} + \frac{i}{4}\left(\sqrt{5} - 1\right)$$

01.03.03.0100.01

$$e^{\frac{9\pi i}{10}} = \left(z; z^8 - z^6 + z^4 - z^2 + 1\right)_2^{-1}$$

01.03.03.0101.01

$$e^{\frac{9\pi i}{10}} = (-1)^{9/10}$$

01.03.03.0102.01

$$e^{\frac{11\pi i}{12}} = -\frac{1+\sqrt{3}}{2\sqrt{2}} + \frac{i\left(\sqrt{3} - 1\right)}{2\sqrt{2}}$$

01.03.03.0103.01

$$e^{\frac{11\pi i}{12}} = \left(z; z^8 - z^4 + 1\right)_2^{-1}$$

01.03.03.0104.01

$$e^{\frac{11\pi i}{12}} = (-1)^{11/12}$$

01.03.03.0105.01

$$e^{\pi i} = -1$$

01.03.03.0106.01

$$e^{\frac{13\pi i}{12}} = -\frac{1+\sqrt{3}}{2\sqrt{2}} - \frac{i}{4}\left(\sqrt{6} - \sqrt{2}\right)$$

01.03.03.0107.01

$$e^{\frac{13\pi i}{12}} = \left(z; z^8 - z^4 + 1\right)_1^{-1}$$

01.03.03.0108.01

$$e^{\frac{13\pi i}{12}} = -\sqrt[12]{-1}$$

01.03.03.0109.01

$$e^{\frac{11\pi i}{10}} = -\frac{1}{2}\sqrt{\frac{5+\sqrt{5}}{2}} - \frac{i}{4}\left(\sqrt{5} - 1\right)$$

01.03.03.0110.01

$$e^{\frac{11\pi i}{10}} == \left(z;\, z^8 - z^6 + z^4 - z^2 + 1\right)_1^{-1}$$

01.03.03.0111.01

$$e^{\frac{11\pi i}{10}} == -\sqrt[10]{-1}$$

01.03.03.0112.01

$$e^{\frac{10\pi i}{9}} == -\frac{1}{4}\left(2^{2/3}\sqrt[3]{-1 - i\sqrt{3}} + 2^{2/3}\sqrt{3}\, i\sqrt[3]{-1 - i\sqrt{3}}\right)$$

01.03.03.0113.01

$$e^{\frac{10\pi i}{9}} == \left(z;\, z^6 + z^3 + 1\right)_1^{-1}$$

01.03.03.0114.01

$$e^{\frac{10\pi i}{9}} == -\sqrt[9]{-1}$$

01.03.03.0115.01

$$e^{\frac{9\pi i}{8}} == -\frac{\sqrt{2+\sqrt{2}}}{2} - \frac{i}{2}\sqrt{2-\sqrt{2}}$$

01.03.03.0116.01

$$e^{\frac{9\pi i}{8}} == \left(z;\, z^8 + 1\right)_1^{-1}$$

01.03.03.0117.01

$$e^{\frac{9\pi i}{8}} == -\sqrt[8]{-1}$$

01.03.03.0118.01

$$e^{\frac{9\pi i}{7}} == \frac{1}{12\sqrt[3]{-364 - 84 i\sqrt{3}}}\Big(2\, 2^{2/3}\, 7^{5/6}\, i\sqrt[3]{-13 - 3 i\sqrt{3}} - 2\, 2^{2/3}\sqrt[3]{-91 - 21 i\sqrt{3}} - i\sqrt{3}\left(14 - i\sqrt{7} - 3\sqrt{21}\right)^{2/3}\sqrt[3]{7 - 21 i\sqrt{3} - 13 i\sqrt{7} + 3\sqrt{21}} - \left(14 - i\sqrt{7} - 3\sqrt{21}\right)^{2/3}\sqrt[3]{7 - 21 i\sqrt{3} - 13 i\sqrt{7} + 3\sqrt{21}} - i\, 2^{2/3}\sqrt{7}\sqrt[3]{7 - 21 i\sqrt{3} - 13 i\sqrt{7} + 3\sqrt{21}} - 2^{2/3}\sqrt{21}\sqrt[3]{7 - 21 i\sqrt{3} - 13 i\sqrt{7} + 3\sqrt{21}} + \left(14 + i\sqrt{7} + 3\sqrt{21}\right)^{2/3}\sqrt[3]{7 - 21 i\sqrt{3} + 13 i\sqrt{7} - 3\sqrt{21}} - i\, 2^{2/3}\sqrt{7}\sqrt[3]{7 - 21 i\sqrt{3} + 13 i\sqrt{7} - 3\sqrt{21}} + 2^{2/3}\sqrt{21}\sqrt[3]{7 - 21 i\sqrt{3} + 13 i\sqrt{7} - 3\sqrt{21}} - 10\, 7^{2/3} - i\sqrt{3}\sqrt[3]{7 - 21 i\sqrt{3} + 13 i\sqrt{7} - 3\sqrt{21}}\left(14 + i\sqrt{7} + 3\sqrt{21}\right)^{2/3} + 7\, 2^{2/3}\left(i + \sqrt{3}\right)\sqrt[3]{1 - 3 i\sqrt{3}}\, i + 2\sqrt{3}\, 7^{2/3}\, i\Big)$$

01.03.03.0119.01

$$e^{\frac{9\pi i}{7}} == \left(z;\, z^6 + z^5 + z^4 + z^3 + z^2 + z + 1\right)_1^{-1}$$

01.03.03.0120.01

$$e^{\frac{9\pi i}{7}} == -\sqrt[7]{-1}$$

01.03.03.0121.01

$$e^{\frac{7\pi i}{6}} == \frac{-\sqrt{3} - i}{2}$$

01.03.03.0122.01

$$e^{\frac{7\pi i}{6}} = \left(z;\, z^4 - z^2 + 1\right)_1^{-1}$$

01.03.03.0123.01

$$e^{\frac{7\pi i}{6}} = -\sqrt[6]{-1}$$

01.03.03.0124.01

$$e^{\frac{6\pi i}{5}} = -\frac{1}{4}\left(1 + \sqrt{5}\right) - \frac{i}{2}\sqrt{\frac{5 - \sqrt{5}}{2}}$$

01.03.03.0125.01

$$e^{\frac{6\pi i}{5}} = \left(z;\, z^4 + z^3 + z^2 + z + 1\right)_1^{-1}$$

01.03.03.0126.01

$$e^{\frac{6\pi i}{5}} = -\sqrt[5]{-1}$$

01.03.03.0127.01

$$e^{\frac{11\pi i}{9}} = -\sqrt[3]{\frac{-1 + i\sqrt{3}}{2}}$$

01.03.03.0128.01

$$e^{\frac{11\pi i}{9}} = \left(z;\, z^6 - z^3 + 1\right)_1^{-1}$$

01.03.03.0129.01

$$e^{\frac{11\pi i}{9}} = -(-1)^{2/9}$$

01.03.03.0130.01

$$e^{\frac{5\pi i}{4}} = \frac{-1 - i}{\sqrt{2}}$$

01.03.03.0131.01

$$e^{\frac{5\pi i}{4}} = \left(z;\, z^4 + 1\right)_1^{-1}$$

01.03.03.0132.01

$$e^{\frac{5\pi i}{4}} = -\sqrt[4]{-1}$$

01.03.03.0133.01

$$e^{\frac{9\pi i}{7}} = \left(\left(2 - 2\, i\sqrt{7}\right)\sqrt[3]{14 - i\sqrt{7} - 3\sqrt{21}} + \left(1 - i\sqrt{3}\right)\left(28 - 2\, i\sqrt{7} - 6\sqrt{21}\right)^{2/3} - 2\sqrt[3]{2}\,\sqrt{7}\left(-i + \sqrt{3}\right)\right) \Big/ \left(12\sqrt[3]{14 - i\sqrt{7} - 3\sqrt{21}}\right)$$

01.03.03.0134.01

$$e^{\frac{9\pi i}{7}} = \left(z;\, z^6 - z^5 + z^4 - z^3 + z^2 - z + 1\right)_1^{-1}$$

01.03.03.0135.01

$$e^{\frac{9\pi i}{7}} = -(-1)^{2/7}$$

01.03.03.0136.01

$$e^{\frac{13\pi i}{10}} = -\frac{1}{2}\sqrt{\frac{5-\sqrt{5}}{2}} - \frac{i}{4}\left(1+\sqrt{5}\right)$$

01.03.03.0137.01

$$e^{\frac{13\pi i}{10}} = \left(z;\, z^8 - z^6 + z^4 - z^2 + 1\right)_3^{-1}$$

01.03.03.0138.01

$$e^{\frac{13\pi i}{10}} = -(-1)^{3/10}$$

01.03.03.0139.01

$$e^{\frac{4\pi i}{3}} = \frac{-1 - i\sqrt{3}}{2}$$

01.03.03.0140.01

$$e^{\frac{4\pi i}{3}} = -\sqrt[3]{-1}$$

01.03.03.0141.01

$$e^{\frac{11\pi i}{8}} = -\frac{1}{2}\sqrt{2-\sqrt{2}} - \frac{i}{2}\sqrt{2+\sqrt{2}}$$

01.03.03.0142.01

$$e^{\frac{11\pi i}{8}} = \left(z;\, z^8 + 1\right)_3^{-1}$$

01.03.03.0143.01

$$e^{\frac{11\pi i}{8}} = -(-1)^{3/8}$$

01.03.03.0144.01

$$e^{\frac{7\pi i}{5}} = -\frac{\sqrt{5}-1}{4} - \frac{i}{2}\sqrt{\frac{5+\sqrt{5}}{2}}$$

01.03.03.0145.01

$$e^{\frac{7\pi i}{5}} = \left(z;\, z^4 - z^3 + z^2 - z + 1\right)_1^{-1}$$

01.03.03.0146.01

$$e^{\frac{7\pi i}{5}} = -(-1)^{2/5}$$

01.03.03.0147.01

$$e^{\frac{17\pi i}{12}} = -\frac{1}{4}\left(\sqrt{6} - \sqrt{2}\right) - \frac{i\left(1+\sqrt{3}\right)}{2\sqrt{2}}$$

01.03.03.0148.01

$$e^{\frac{17\pi i}{12}} = \left(z;\, z^8 - z^4 + 1\right)_3^{-1}$$

01.03.03.0149.01

$$e^{\frac{17\pi i}{12}} = -(-1)^{5/12}$$

01.03.03.0150.01

$$e^{\frac{10\pi i}{7}} == \frac{1}{12\sqrt[3]{-364-84 i\sqrt{3}}}\Big(-2 i\, 2^{2/3}\, 7^{5/6}\sqrt[3]{-13-3 i\sqrt{3}} - 2\, 2^{2/3}\sqrt[3]{-91-21 i\sqrt{3}} - 2\left(14-i\sqrt{7}-3\sqrt{21}\right)^{2/3}\sqrt[3]{7-21 i\sqrt{3}-13 i\sqrt{7}+3\sqrt{21}} - 2 i\, 2^{2/3}\sqrt{7}\sqrt[3]{7-21 i\sqrt{3}-13 i\sqrt{7}+3\sqrt{21}} + 2^{2/3}\sqrt{21}\sqrt[3]{7-21 i\sqrt{3}+13 i\sqrt{7}-3\sqrt{21}} + 8\, 7^{2/3} - i\sqrt{3}\sqrt[3]{7-21 i\sqrt{3}+13 i\sqrt{7}-3\sqrt{21}}\left(14+i\sqrt{7}+3\sqrt{21}\right)^{2/3} - \sqrt[3]{7-21 i\sqrt{3}+13 i\sqrt{7}-3\sqrt{21}}\left(14+i\sqrt{7}+3\sqrt{21}\right)^{2/3} - 7 i\, 2^{2/3}\sqrt[3]{1-3 i\sqrt{3}}\left(-i+\sqrt{3}\right) + 2^{2/3}\sqrt{7}\sqrt[3]{7-21 i\sqrt{3}+13 i\sqrt{7}-3\sqrt{21}}\, i + 4\sqrt{3}\, 7^{2/3}\, i\Big)$$

01.03.03.0151.01

$$e^{\frac{10\pi i}{7}} == \left(z;\, z^6+z^5+z^4+z^3+z^2+z+1\right)_3^{-1}$$

01.03.03.0152.01

$$e^{\frac{10\pi i}{7}} == -(-1)^{3/7}$$

01.03.03.0153.01

$$e^{\frac{13\pi i}{9}} == \frac{1-i\sqrt{3}}{2}\sqrt[3]{\frac{-1-i\sqrt{3}}{2}}$$

01.03.03.0154.01

$$e^{\frac{13\pi i}{9}} == \left(z;\, z^6-z^3+1\right)_3^{-1}$$

01.03.03.0155.01

$$e^{\frac{13\pi i}{9}} == -(-1)^{4/9}$$

01.03.03.0156.01

$$e^{\frac{3\pi i}{2}} == -i$$

01.03.03.0157.01

$$e^{\frac{14\pi i}{9}} == -\frac{1+i\sqrt{3}}{2}\sqrt[3]{\frac{-1+i\sqrt{3}}{2}}$$

01.03.03.0158.01

$$e^{\frac{14\pi i}{9}} == \left(z;\, z^6+z^3+1\right)_3^{-1}$$

01.03.03.0159.01

$$e^{\frac{14\pi i}{9}} == -(-1)^{5/9}$$

01.03.03.0160.01

$$e^{\frac{11\pi i}{7}} == \frac{1}{6}\left(-2^{2/3}\sqrt[3]{14-i\sqrt{7}-3\sqrt{21}} - i\sqrt{7} - \frac{2 i\sqrt{7}}{\sqrt[3]{7-\frac{i\sqrt{7}}{2}-\frac{3\sqrt{21}}{2}}} + 1\right)$$

01.03.03.0161.01

$$e^{\frac{11\pi i}{7}} = \left(z;\, z^6 - z^5 + z^4 - z^3 + z^2 - z + 1\right)_3^{-1}$$

01.03.03.0162.01

$$e^{\frac{11\pi i}{7}} = -(-1)^{4/7}$$

01.03.03.0163.01

$$e^{\frac{19\pi i}{12}} = \frac{\sqrt{3}-1}{2\sqrt{2}} - \frac{i\left(1+\sqrt{3}\right)}{2\sqrt{2}}$$

01.03.03.0164.01

$$e^{\frac{19\pi i}{12}} = \left(z;\, z^8 - z^4 + 1\right)_5^{-1}$$

01.03.03.0165.01

$$e^{\frac{19\pi i}{12}} = -(-1)^{7/12}$$

01.03.03.0166.01

$$e^{\frac{8\pi i}{5}} = \frac{\sqrt{5}-1}{4} - \frac{i}{2}\sqrt{\frac{5+\sqrt{5}}{2}}$$

01.03.03.0167.01

$$e^{\frac{8\pi i}{5}} = \left(z;\, z^4 + z^3 + z^2 + z + 1\right)_3^{-1}$$

01.03.03.0168.01

$$e^{\frac{8\pi i}{5}} = -(-1)^{3/5}$$

01.03.03.0169.01

$$e^{\frac{13\pi i}{8}} = \frac{\sqrt{2-\sqrt{2}}}{2} - \frac{i}{2}\sqrt{2+\sqrt{2}}$$

01.03.03.0170.01

$$e^{\frac{13\pi i}{8}} = \left(z;\, z^8 + 1\right)_5^{-1}$$

01.03.03.0171.01

$$e^{\frac{13\pi i}{8}} = -(-1)^{5/8}$$

01.03.03.0172.01

$$e^{\frac{5\pi i}{3}} = \frac{1 - i\sqrt{3}}{2}$$

01.03.03.0173.01

$$e^{\frac{5\pi i}{3}} = -(-1)^{2/3}$$

01.03.03.0174.01

$$e^{\frac{17\pi i}{10}} = \frac{1}{2}\sqrt{\frac{5-\sqrt{5}}{2}} - \frac{i}{4}\left(1+\sqrt{5}\right)$$

01.03.03.0175.01

$$e^{\frac{17\pi i}{10}} = \left(z;\, z^8 - z^6 + z^4 - z^2 + 1\right)_5^{-1}$$

01.03.03.0176.01

$$e^{\frac{17\pi i}{10}} == -(-1)^{7/10}$$

01.03.03.0177.01

$$e^{\frac{12\pi i}{7}} == \frac{1}{24\sqrt[3]{-364-84\,i\sqrt{3}}} \left(28\,2^{2/3}\sqrt[3]{1-3\,i\sqrt{3}} + 4\,7^{2/3}\left(1-3\,i\sqrt{3}\right) - 4\,i\sqrt{7}\sqrt[3]{-364-84\,i\sqrt{3}} - 4\sqrt[3]{-364-84\,i\sqrt{3}} - 2\sqrt{21}\right.$$
$$\sqrt[3]{2\left(1-3\,i\sqrt{3}\right)\left(14+i\sqrt{7}+3\sqrt{21}\right)} - 2\,i\sqrt{3}\left(14-i\sqrt{7}-3\sqrt{21}\right)^{2/3}\sqrt[3]{7-21\,i\sqrt{3}-13\,i\sqrt{7}+3\sqrt{21}} +$$
$$4\left(14+i\sqrt{7}+3\sqrt{21}\right)^{2/3}\sqrt[3]{7-21\,i\sqrt{3}+13\,i\sqrt{7}-3\sqrt{21}} - 4\,i\sqrt{7}\sqrt[3]{28-84\,i\sqrt{3}+52\,i\sqrt{7}-12\sqrt{21}} +$$
$$\left. 2\sqrt[3]{7-21\,i\sqrt{3}-13\,i\sqrt{7}+3\sqrt{21}}\left(14-i\sqrt{7}-3\sqrt{21}\right)^{2/3} + 2\sqrt{7}\sqrt[3]{2\left(1-3\,i\sqrt{3}\right)\left(14+i\sqrt{7}+3\sqrt{21}\right)}\;i\right)$$

01.03.03.0178.01

$$e^{\frac{12\pi i}{7}} == \left(z;\, z^6+z^5+z^4+z^3+z^2+z+1\right)_5^{-1}$$

01.03.03.0179.01

$$e^{\frac{12\pi i}{7}} == -(-1)^{5/7}$$

01.03.03.0180.01

$$e^{\frac{7\pi i}{4}} == \frac{1-i}{\sqrt{2}}$$

01.03.03.0181.01

$$e^{\frac{7\pi i}{4}} == \left(z;\, z^4+1\right)_3^{-1}$$

01.03.03.0182.01

$$e^{\frac{7\pi i}{4}} == -(-1)^{3/4}$$

01.03.03.0183.01

$$e^{\frac{16\pi i}{9}} == \sqrt{-\frac{1+i\sqrt{3}}{2}}$$

01.03.03.0184.01

$$e^{\frac{16\pi i}{9}} == \left(z;\, z^6+z^3+1\right)_5^{-1}$$

01.03.03.0185.01

$$e^{\frac{16\pi i}{9}} == -(-1)^{7/9}$$

01.03.03.0186.01

$$e^{\frac{9\pi i}{5}} == \frac{1+\sqrt{5}}{4} - \frac{i}{2}\sqrt{\frac{5-\sqrt{5}}{2}}$$

01.03.03.0187.01

$$e^{\frac{9\pi i}{5}} == \left(z;\, z^4-z^3+z^2-z+1\right)_3^{-1}$$

01.03.03.0188.01

$$e^{\frac{9\pi i}{5}} == -(-1)^{4/5}$$

01.03.03.0189.01

$$e^{\frac{11\pi i}{6}} == \frac{\sqrt{3}-i}{2}$$

01.03.03.0190.01

$$e^{\frac{11\pi i}{6}} == \left(z;\, z^4 - z^2 + 1\right)_3^{-1}$$

01.03.03.0191.01

$$e^{\frac{11\pi i}{6}} == -(-1)^{5/6}$$

01.03.03.0192.01

$$e^{\frac{13\pi i}{7}} == \left(\left(2+2\,i\sqrt{7}\right)\sqrt[3]{14+i\sqrt{7}+3\sqrt{21}} + \left(1-i\sqrt{3}\right)\left(28+2\,i\sqrt{7}+6\sqrt{21}\right)^{2/3} + 2\sqrt[3]{2}\,\sqrt{7}\,\left(-i+\sqrt{3}\right)\right) \Big/ \left(12\sqrt[3]{14+i\sqrt{7}+3\sqrt{21}}\right)$$

01.03.03.0193.01

$$e^{\frac{13\pi i}{7}} == \left(z;\, z^6 - z^5 + z^4 - z^3 + z^2 - z + 1\right)_5^{-1}$$

01.03.03.0194.01

$$e^{\frac{13\pi i}{7}} == -(-1)^{6/7}$$

01.03.03.0195.01

$$e^{\frac{15\pi i}{8}} == \frac{\sqrt{2+\sqrt{2}}}{2} - \frac{i}{2}\sqrt{2-\sqrt{2}}$$

01.03.03.0196.01

$$e^{\frac{15\pi i}{8}} == \left(z;\, z^8 + 1\right)_7^{-1}$$

01.03.03.0197.01

$$e^{\frac{15\pi i}{8}} == -(-1)^{7/8}$$

01.03.03.0198.01

$$e^{\frac{17\pi i}{9}} == -\left(\frac{-1+i\sqrt{3}}{2}\right)^{4/3}$$

01.03.03.0199.01

$$e^{\frac{17\pi i}{9}} == \left(z;\, z^6 - z^3 + 1\right)_5^{-1}$$

01.03.03.0200.01

$$e^{\frac{17\pi i}{9}} == -(-1)^{8/9}$$

01.03.03.0201.01

$$e^{\frac{19\pi i}{10}} == \frac{1}{2}\sqrt{\frac{5+\sqrt{5}}{2}} - \frac{i}{4}\left(\sqrt{5}-1\right)$$

01.03.03.0202.01

$$e^{\frac{19\pi i}{10}} == \left(z; z^8 - z^6 + z^4 - z^2 + 1\right)_7^{-1}$$

01.03.03.0203.01

$$e^{\frac{19\pi i}{10}} == -(-1)^{9/10}$$

01.03.03.0204.01

$$e^{\frac{23\pi i}{12}} == \frac{\sqrt{2} + \sqrt{6}}{4} - \frac{i}{4}\left(\sqrt{6} - \sqrt{2}\right)$$

01.03.03.0205.01

$$e^{\frac{23\pi i}{12}} == \left(z; z^8 - z^4 + 1\right)_7^{-1}$$

01.03.03.0206.01

$$e^{\frac{23\pi i}{12}} == -(-1)^{11/12}$$

01.03.03.0207.01

$$e^{2\pi i} == 1$$

01.03.03.0208.01

$$e^{\frac{\pi i}{30}} == \frac{1}{8}\left(\sqrt{10 - 2\sqrt{5}} + \sqrt{3} + \sqrt{15}\right) + \frac{i}{8}\left(\sqrt{30 - 6\sqrt{5}} - \sqrt{5} - 1\right)$$

$\exp\left(\frac{n i \pi}{m}\right)$ can be expressed using only square roots if $n \in \mathbb{Z}$ and m is a product of a power of 2 and distinct Fermat primes $\{3, 5, 17, 257, \ldots\}$.

Values at infinities

01.03.03.0209.01

$$e^{\infty} == \infty$$

01.03.03.0210.01

$$e^{-\infty} == 0$$

01.03.03.0211.01

$$e^{i\infty} == ¿$$

01.03.03.0212.01

$$e^{-i\infty} == ¿$$

01.03.03.0213.01

$$e^{\tilde{\infty}} == ¿$$

General characteristics

Domain and analyticity

e^z is an entire analytical function of z which is defined over the whole complex z-plane.

01.03.04.0001.01

$$z \longrightarrow e^z :: \mathbb{C} \longrightarrow \mathbb{C}$$

Symmetries and periodicities

Mirror symmetry

01.03.04.0002.01

$e^{\bar{z}} = \overline{e^z}$

Periodicity

e^z is a periodic function with period $2 \pi i$.

01.03.04.0003.01

$e^{z+2 i \pi m} = e^z /; m \in \mathbb{Z}$

01.03.04.0004.01

$e^{z+i \pi m} = (-1)^m e^z /; m \in \mathbb{Z}$

Homogeneity

01.03.04.0005.01

$e^{\lambda z} = (e^z)^\lambda /; -\pi < \operatorname{Im}(z) \leq \pi$

Poles and essential singularities

The function e^z has only one singular point at $z = \tilde{\infty}$. It is an essential singular point.

01.03.04.0006.01

$\mathcal{Sing}_z(e^z) = \{\{\tilde{\infty}, \infty\}\}$

Branch points

The function e^z does not have branch points.

01.03.04.0007.01

$\mathcal{BP}_z(e^z) = \{\}$

Branch cuts

The function e^z does not have branch cuts.

01.03.04.0008.01

$\mathcal{BC}_z(e^z) = \{\}$

Series representations

Generalized power series

Expansions at $z = z_0$

For the function itself

01.03.06.0005.02

$$e^z \propto e^{z_0} \left(1 + z - z_0 + \frac{1}{2} (z - z_0)^2 + \frac{1}{6} (z - z_0)^3 + \ldots\right) /; (z \to z_0)$$

01.03.06.0020.01

$$e^z \propto e^{z_0}\left(1 + z - z_0 + \frac{1}{2}(z-z_0)^2 + \frac{1}{6}(z-z_0)^3 + O\left((z-z_0)^4\right)\right)$$

01.03.06.0006.01

$$e^z = e^{z_0}\sum_{k=0}^{\infty}\frac{(z-z_0)^k}{k!}$$

01.03.06.0007.01

$$e^z = e^{z_0}\,{}_0F_0(;;z-z_0)$$

01.03.06.0008.02

$$e^z \propto e^{z_0}(1 + O(z-z_0))$$

01.03.06.0021.01

$$e^z = F_\infty(z, z_0) /; \left(\left(F_n(z, z_0) = e^{z_0}\sum_{k=0}^{n}\frac{(z-z_0)^k}{k!} = e^z\, Q(n+1, z-z_0)\right) \bigwedge n \in \mathbb{N}\right)$$

Summed form of the truncated series expansion.

Expansions at $z = 0$

For the function itself

01.03.06.0001.02

$$e^z \propto 1 + z + \frac{z^2}{2} + \frac{z^3}{6} + \ldots /; (z \to 0)$$

01.03.06.0022.01

$$e^z \propto 1 + z + \frac{z^2}{2} + \frac{z^3}{6} + O\left(z^4\right)$$

01.03.06.0002.01

$$e^z = \sum_{k=0}^{\infty}\frac{z^k}{k!}$$

01.03.06.0003.01

$$e^z = {}_0F_0(;;z)$$

01.03.06.0004.02

$$e^z \propto 1 + O(z)$$

01.03.06.0023.01

$$e^z = F_\infty(z) /; \left(\left(F_n(z) = \sum_{k=0}^{n}\frac{z^k}{k!} = e^z\, Q(n+1, z)\right) \bigwedge n \in \mathbb{N}\right)$$

Summed form of the truncated series expansion.

Other series representations

01.03.06.0018.01

$$e^z = \sum_{k=0}^{\infty}\frac{z^{2k-1}(z+2k)}{(2k)!}$$

H. J. Brothers

01.03.06.0019.01

$$e^z = \sum_{k=0}^{\infty} \frac{z^{2k} (z + 2k + 1)}{(2k + 1)!}$$

H. J. Brothers

01.03.06.0024.01

$$e^z = \sum_{k=0}^{\infty} \frac{z^{2k} (z + 2k + 1)}{(2k + 1)!}$$

H. J. Brothers

Asymptotic series expansions

01.03.06.0009.01

$$e^z \propto e^z \;/;\; (|z| \to \infty)$$

Residue representations

01.03.06.0010.01

$$e^z = \sum_{j=0}^{\infty} \operatorname{res}_s\left((-z)^{-s}\, \Gamma(s)\right)(-j)$$

Padé approximants

01.03.06.0011.01

$$\mathcal{P}_0^{[L,M]}(e^z, z) = \frac{{}_1F_1(-L; -L - M; z)}{{}_1F_1(-M; -L - M; -z)}$$

Other series representations

01.03.06.0012.01

$$e^z = \sum_{k=-\infty}^{\infty} I_k(z)$$

01.03.06.0013.01

$$e^z = I_0(z) + 2 \sum_{k=1}^{\infty} I_k(z)$$

01.03.06.0014.01

$$e^{-z} = \sum_{k=-\infty}^{\infty} (-1)^k\, I_k(z)$$

01.03.06.0015.01

$$e^{-z} = I_0(z) + 2 \sum_{k=1}^{\infty} (-1)^k\, I_k(z)$$

01.03.06.0017.01

$$e^z = \left(m! \sum_{k=m}^{\infty} \frac{\mathcal{S}_k^{(m)}}{k!} z^k \right)^{1/m} + 1 \;/;\; n \in \mathbb{N}$$

01.03.06.0016.01

$$e^{i x y} = \sqrt{\frac{\pi}{2 x}} \sum_{l=0}^{\infty} i^l (2 l + 1) J_{l+1/2}(x) P_l(y)$$

Dual Taylor series representations

01.03.06.0025.01

$$e^{-x^2} \propto \sqrt{\pi} \sum_{k=0}^{\infty} \frac{1}{2^{2k} k!} \frac{\partial^{2k} \delta(x)}{\partial x^{2k}}$$

01.03.06.0026.01

$$e^{-\lambda x^2} \propto \sqrt{\pi} \sum_{k=0}^{\infty} \frac{1}{2^{2k} k!} \frac{\partial^{2k} \delta(x)}{\partial x^{2k}} \lambda^{-2k-1} \;/;\; (\lambda \to \infty)$$

01.03.06.0027.01

$$e^{-x} \theta(x) \propto \sum_{k=0}^{\infty} (-1)^k \frac{\partial^k \delta(x)}{\partial x^k}$$

01.03.06.0028.01

$$e^{-\lambda x} \theta(x) \propto \sum_{k=0}^{\infty} (-1)^k \frac{\partial^k \delta(x)}{\partial x^k} \lambda^{-k-1} \;/;\; (\lambda \to \infty)$$

01.03.06.0029.01

$$e^{-|x|} \propto 2 \sum_{k=0}^{\infty} k! \frac{\partial^{2k} \delta(x)}{\partial x^{2k}}$$

01.03.06.0030.01

$$e^{-\lambda |x|} \propto 2 \sum_{k=0}^{\infty} k! \frac{\partial^{2k} \delta(x)}{\partial x^{2k}} \lambda^{-2k-1} \;/;\; (\lambda \to \infty)$$

01.03.06.0031.01

$$e^{i x} \theta(x) \propto \sum_{k=0}^{\infty} (-1)^k e^{\frac{\pi i (k+1)}{2}} \frac{\partial^k \delta(x)}{\partial x^k}$$

01.03.06.0032.01

$$e^{-i x} \theta(x) \propto \sum_{k=0}^{\infty} (-1)^k e^{-\frac{\pi i (k+1)}{2}} \frac{\partial^k \delta(x)}{\partial x^k}$$

01.03.06.0033.01

$$e^{i \lambda x} \theta(x) \propto \sum_{k=0}^{\infty} (-1)^k e^{\frac{\pi i (k+1)}{2}} \frac{\partial^k \delta(x)}{\partial x^k} \lambda^{-k-1} \;/;\; (\lambda \to \infty)$$

01.03.06.0034.01

$$e^{-i \lambda x} \theta(x) \propto \sum_{k=0}^{\infty} (-1)^k e^{-\frac{\pi i (k+1)}{2}} \frac{\partial^k \delta(x)}{\partial x^k} \lambda^{-k-1} \;/;\; (\lambda \to \infty)$$

Integral representations

Contour integral representations

01.03.07.0001.01

$$e^z = \frac{1}{2\pi i}\int_{\mathcal{L}} \Gamma(s)\,(-z)^{-s}\,ds$$

01.03.07.0002.01

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

Product representations

01.03.08.0001.01

$$e^z = \prod_{k=1}^{\infty}\left(1-z^k\right)^{-\frac{\mu(k)}{k}}\;/;\;|z|<1$$

Limit representations

Direct Limits

01.03.09.0001.01

$$e^z = \lim_{n\to\infty}\left(1+\frac{z}{n}\right)^n$$

01.03.09.0002.01

$$e^z = \lim_{n\to\infty} k!\,(-z)^{-k}\binom{n}{k}\left(-\frac{z}{n}\right)^k\left(1+\frac{z}{n}\right)^{n-k}$$

01.03.09.0003.01

$$e^z = \lim_{n\to\infty}\left(\frac{2n+z}{2n-z}\right)^n$$

Iterative Limits

01.03.09.0004.01

$$e^z = \lim_{k\to\infty} y_{i,k}\;/;\;y_{i,0} = \left(1+\frac{z}{n}\right)^n \bigwedge y_{i,k} = \frac{2^k\,y_{i+1,k-1}-y_{i,k-1}}{2^k-1} \bigwedge i\in\mathbb{N}$$

Continued fraction representations

01.03.10.0001.01

$$e^z = \cfrac{1}{1 - \cfrac{z}{1 + \cfrac{z}{2 - \cfrac{z}{3 + \cfrac{z}{2 - \cfrac{z}{5 + \cfrac{z}{2 - \ldots}}}}}}}$$

01.03.10.0002.01

$$e^z = \frac{1}{1 + \mathrm{K}_k\left((-1)^k z, \frac{1}{2}\left(1 - (-1)^k\right) k + (-1)^k + 1\right)_1^\infty}$$

01.03.10.0003.01

$$e^z = 1 + \cfrac{z}{1 - \cfrac{z}{2 + \cfrac{z}{3 - \cfrac{z}{2 + \cfrac{z}{5 - \cfrac{z}{2 + \cfrac{z}{7 - \ldots}}}}}}}$$

01.03.10.0004.01

$$e^z = 1 + \mathrm{K}_k\left((-1)^{k-1} z, \frac{1}{2}\left(1 - (-1)^k\right) k + (-1)^k + 1\right)_1^\infty$$

01.03.10.0005.01

$$e^{\sqrt{z}} = 1 + \cfrac{2\sqrt{z}}{2 - \sqrt{z} + \cfrac{z/3}{2 + \cfrac{z/15}{2 + \cfrac{z/35}{2 + \cfrac{z/63}{2 + \cfrac{z/99}{2 + \ldots}}}}}}$$

01.03.10.0006.01

$$e^{\sqrt{z}} = 1 + \frac{2\sqrt{z}}{2 - \sqrt{z} + \mathrm{K}_k\left(\frac{z}{4k^2-1}, 2\right)_1^\infty}$$

Differential equations

Ordinary linear differential equations and wronskians

For the direct function itself

01.03.13.0001.01

$$w'(z) - w(z) = 0 \;/;\; w(z) = c_1 e^z$$

01.03.13.0002.01

$$w'(z) - w(z) == 0 \;/;\; w(z) == e^z \bigwedge w[0] == 1$$

01.03.13.0003.01

$$w'(z) - g'(z)\, w(z) = 0 \;/;\; w(z) = c_1\, e^{g(z)}$$

01.03.13.0004.01

$$w'(z) - \left(g'(z) + \frac{h'(z)}{h(z)}\right) w(z) = 0 \;/;\; w(z) = c_1\, h(z)\, e^{g(z)}$$

01.03.13.0005.01

$$z\, w'(z) - (a\, r\, z^r + s)\, w(z) = 0 \;/;\; w(z) = c_1\, z^s\, e^{a\, z^r}$$

01.03.13.0006.01

$$w'(z) - (a \log(r)\, r^z + \log(s))\, w(z) = 0 \;/;\; w(z) = c_1\, s^z\, e^{a\, r^z}$$

Equations involving this function

Algebraic equations

01.03.15.0001.01

$$(w\, e^w == z) \Longleftarrow (w == W_n(z) \;/;\; n \in \mathbb{Z})$$

Differential equations

First-order equations

01.03.15.0002.01

$$(w'(x) + e^x\, w(x) == \alpha) \Longleftarrow \left(w == e^{-e^x}\, \alpha\, \mathrm{Ei}(e^x) + e^{-e^x}\, c_1\right)$$

Schrödinger equations

The spectrum is purely continuous, the wavefunctions $\psi_k(x) == \frac{\sqrt{\sinh(\pi k)}}{\pi} K_{i\, k}(e^x) \;/;\; k > 0$ are normalized to $\delta\left(k - k'\right)$.

01.03.15.0003.01

$$\left(-\psi_k''(x) + e^{2x}\, \psi_k(x) == k^2\, \psi_k(x)\right) \Longleftarrow \left(\psi_k(x) == \frac{\sqrt{\sinh(\pi k)}}{\pi} K_{i\, k}(e^x) \;/;\; k > 0\right)$$

01.03.15.0004.01

$$\mathcal{F}_x[\psi_k(x)]\,(p) == \frac{\sqrt{\sinh(\pi k)}}{4\pi}\, 2^{-i\, p}\, \Gamma\left(-\frac{i}{2}(p + k)\right) \Gamma\left(-\frac{i}{2}(p - k)\right)$$

01.03.15.0005.01

$$\mathcal{W}_y[\psi_k(y)]\,(x,\, p) == \int_{-\infty}^{\infty} e^{-i\, y\, p}\, \overline{\psi}_k\left(x - \frac{y}{2}\right) \psi_k\left(x + \frac{y}{2}\right) dy == \frac{i}{4}\, \pi\, \sqrt{\sinh(\pi k)}\, \Big(c_-\, 4^{-i(k-p)}\, e^{2\, i(k-p)\, x}\, {}_0\tilde{F}_3\left(1 + i\, k,\; 1 - i\, p,\; 1 + i(k - p),\; e^{4x} / 16\right) + c_+\, 4^{i(k+p)}\, e^{-2\, i(k+p)\, x}\, {}_0\tilde{F}_3\left(1 - i\, k,\; 1 - i\, p,\; 1 - i(k + p),\; e^{4x} / 16\right) - c_+\, 4^{-i(k+p)}\, e^{2\, i(k+p)\, x}\, {}_0\tilde{F}_3\left(1 + i\, k,\; 1 + i\, p,\; 1 + i(k + p),\; e^{4x} / 16\right) - c_-\, 4^{i(k-p)}\, e^{-2\, i(k-p)\, x}\, {}_0\tilde{F}_3\left(1 - i\, k,\; 1 + i\, p,\; 1 - i(k - p),\; e^{4x} / 16\right)\Big) \;/;\; c_{\pm} == \mathrm{csch}(k\, \pi)\, \mathrm{csch}(p\, \pi)\, \mathrm{csch}((k \pm p)\, \pi).$$

Transformations

Transformations and argument simplifications

Argument involving complex components

01.03.16.0079.01

$$e^{i \arg(z)} = \frac{z}{|z|}$$

01.03.16.0097.01

$$e^{i \arg(z)} = \operatorname{sgn}(z)$$

01.03.16.0080.01

$$e^{i \arg(z)} = \cos(\arg(z)) + i \sin(\arg(z))$$

01.03.16.0081.01

$$e^{i \arg(z)} = \cos\left(\tan^{-1}\left(\frac{\operatorname{Im}(z)}{\operatorname{Re}(z)}\right)\right) + i \sin\left(\tan^{-1}\left(\frac{\operatorname{Im}(z)}{\operatorname{Re}(z)}\right)\right) /; -\frac{\pi}{2} < \arg(\operatorname{Re}(z)) \leq \frac{\pi}{2}$$

01.03.16.0098.01

$$e^{\bar{z}} = e^{z - 2 i \operatorname{Im}(z)}$$

Argument involving basic arithmetic operations

01.03.16.0099.01

$$e^{-z} = \frac{1}{e^z}$$

01.03.16.0100.01

$$e^{i z} = (e^z)^i /; -\pi < \operatorname{Im}(z) \leq \pi$$

01.03.16.0101.01

$$e^{i z} = (e^z)^i e^{2 \pi k} /; -\pi - 2 \pi k < \operatorname{Im}(z) \leq \pi - 2 \pi k \bigwedge k \in \mathbb{Z}$$

01.03.16.0102.01

$$e^{i z} = (e^z)^i e^{2 \pi \left\lfloor \frac{\pi - \operatorname{Im}(z)}{2 \pi} \right\rfloor}$$

01.03.16.0103.01

$$e^{-i z} = (e^z)^{-i} /; -\pi < \operatorname{Im}(z) \leq \pi$$

01.03.16.0104.01

$$e^{-i z} = (e^z)^{-i} e^{-2 \pi k} /; -\pi - 2 \pi k < \operatorname{Im}(z) \leq \pi - 2 \pi k \bigwedge k \in \mathbb{Z}$$

01.03.16.0105.01

$$e^{-i z} = (e^z)^{-i} e^{-2 \pi \left\lfloor \frac{\pi - \operatorname{Im}(z)}{2 \pi} \right\rfloor}$$

Argument involving inverse trigonometric and hyperbolic functions

Argument involving numeric multiples of inverse trigonometric and hyperbolic functions

01.03.16.0003.01

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

01.03.16.0004.01

$$\exp\left(i \cos^{-1}(z)\right) = z + i \sqrt{1 - z^2}$$

01.03.16.0005.01

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

01.03.16.0006.01

$$e^{i \tan^{-1}(x, y)} = \frac{x + i y}{\sqrt{x^2 + y^2}}$$

01.03.16.0007.01

$$\exp\left(i \cot^{-1}(z)\right) = \frac{\sqrt{-z} \, (z + i)}{\sqrt{z} \sqrt{-z^2 - 1}}$$

01.03.16.0008.01

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

01.03.16.0009.01

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

01.03.16.0010.01

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

01.03.16.0011.01

$$\exp\left(\cosh^{-1}(z)\right) = z + \sqrt{z - 1} \sqrt{z + 1}$$

01.03.16.0012.01

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

01.03.16.0013.01

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

01.03.16.0014.01

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

01.03.16.0015.01

$$\exp\left(\operatorname{sech}^{-1}(z)\right) = \frac{1}{z} \left(1 + \sqrt{1 - z} \Big/ \sqrt{\frac{1}{1 + z}}\right)$$

01.03.16.0016.01

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

01.03.16.0017.01

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

01.03.16.0018.01

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

01.03.16.0019.01

$$\exp\left(\frac{i}{2}\cot^{-1}(z)\right) = \frac{1}{\sqrt{2}}\left(\sqrt{\frac{z^2+\sqrt{-z^2-1}\sqrt{-z^2}+1}{z^2+1}}\,i\sqrt{\frac{1}{z^2}}\,z + \sqrt{1+\frac{1}{\sqrt{1+\frac{1}{z^2}}}}\right)$$

01.03.16.0020.01

$$\exp\left(\frac{i}{2}\csc^{-1}(z)\right) = \frac{1}{\sqrt{2}}\left(i\sqrt{\frac{1}{z^2}}\sqrt{1-\sqrt{1-\frac{1}{z^2}}}\,z + \sqrt{\sqrt{1-\frac{1}{z^2}}+1}\right)$$

01.03.16.0021.01

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

01.03.16.0022.01

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

01.03.16.0023.01

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

01.03.16.0024.01

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

01.03.16.0025.01

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

01.03.16.0026.01

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

01.03.16.0027.01

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

Argument involving symbolic multiples of inverse trigonometric and hyperbolic functions

01.03.16.0028.01

$$e^{i\,n\sin^{-1}(z)} = n\sum_{k=0}^{\left\lfloor\frac{n}{2}\right\rfloor}\frac{(-1)^k\,(n-k-1)!\,2^{n-2k-1}\left(1-z^2\right)^{\frac{n}{2}-k}}{k!\,(n-2k)!}+i\,z\sum_{k=0}^{\left\lfloor\frac{n-1}{2}\right\rfloor}(-1)^k\binom{n-k-1}{k}2^{n-2k-1}\left(1-z^2\right)^{\frac{n-1}{2}-k}\ /;\ n\in\mathbb{N}^+$$

01.03.16.0029.01

$$e^{i\,n\sin^{-1}(z)} = T_n\left(\sqrt{1-z^2}\right)+i\,z\,U_{n-1}\left(\sqrt{1-z^2}\right)\ /;\ n\in\mathbb{N}^+$$

01.03.16.0030.01

$$e^{i\,n\cos^{-1}(z)} = n\sum_{k=0}^{\left\lfloor\frac{n}{2}\right\rfloor}\frac{(-1)^k\,(n-k-1)!\,2^{n-2k-1}\,z^{n-2k}}{k!\,(n-2k)!}+i\,n!\sum_{k=0}^{\left\lfloor\frac{n-1}{2}\right\rfloor}\frac{(-1)^k\left(1-z^2\right)^{k+\frac{1}{2}}\,z^{n-2k-1}}{(2k+1)!\,(n-2k-1)!}\ /;\ n\in\mathbb{N}^+$$

01.03.16.0031.01

$$e^{i\,n\cos^{-1}(z)} = T_n(z)+i\sqrt{1-z^2}\ U_{n-1}(z)\ /;\ n\in\mathbb{N}^+$$

01.03.16.0032.01

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

01.03.16.0033.01

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

01.03.16.0034.01

$$e^{i\,n\tan^{-1}(x,y)} = \frac{i\,x^{n-1}\,y}{\left(x^2+y^2\right)^{n/2}}\sum_{k=0}^{\left\lfloor\frac{n-1}{2}\right\rfloor}(-1)^k\binom{n-k-1}{k}2^{n-2k-1}\left(\frac{x^2+y^2}{x^2}\right)^k+\frac{n\,x^n}{\left(x^2+y^2\right)^{n/2}}\sum_{k=0}^{\left\lfloor\frac{n}{2}\right\rfloor}\frac{(-1)^k\,(n-k-1)!\,2^{n-2k-1}}{k!\,(n-2k)!}\left(\frac{x^2+y^2}{x^2}\right)^k\ /;$$

$$n\in\mathbb{N}^+$$

01.03.16.0035.01

$$e^{i\,n\tan^{-1}(x,y)} = T_n\left(\frac{x}{\sqrt{x^2+y^2}}\right)+\frac{i\,y}{\sqrt{x^2+y^2}}\,U_{n-1}\left(\frac{x}{\sqrt{x^2+y^2}}\right)\ /;\ n\in\mathbb{N}^+$$

01.03.16.0036.01

$$e^{i\,n\cot^{-1}(z)} = n\sum_{k=0}^{\left\lfloor\frac{n}{2}\right\rfloor}\frac{(-1)^k\,(n-k-1)!\,2^{n-2k-1}}{k!\,(n-2k)!}\left(\frac{z^2+1}{z^2}\right)^{k-\frac{n}{2}} + i\left(1+\frac{1}{z^2}\right)^{-\frac{n}{2}}\sum_{k=0}^{\left\lfloor\frac{n-1}{2}\right\rfloor}(-1)^k\binom{n}{2k+1}z^{-2k-1} /; n\in\mathbb{N}^+$$

01.03.16.0037.01

$$e^{i\,n\cot^{-1}(z)} = T_n\left(\frac{\sqrt{-z^2}}{\sqrt{-z^2-1}}\right) + \frac{i\sqrt{-z}}{\sqrt{z}\,\sqrt{-z^2-1}}\,U_{n-1}\left(\frac{\sqrt{-z^2}}{\sqrt{-z^2-1}}\right) /; n\in\mathbb{N}^+$$

01.03.16.0038.01

$$e^{i\,n\csc^{-1}(z)} = n\sum_{k=0}^{\left\lfloor\frac{n}{2}\right\rfloor}\frac{(-1)^k\,(n-k-1)!\,2^{n-2k-1}}{k!\,(n-2k)!}\left(1-\frac{1}{z^2}\right)^{\frac{n}{2}-k} + \frac{i}{z}\sum_{k=0}^{\left\lfloor\frac{n-1}{2}\right\rfloor}(-1)^k\binom{n-k-1}{k}2^{n-2k-1}\left(1-\frac{1}{z^2}\right)^{\frac{n-1}{2}-k} /; n\in\mathbb{N}^+$$

01.03.16.0039.01

$$e^{i\,n\csc^{-1}(z)} = T_n\left(\sqrt{1-\frac{1}{z^2}}\right) + \frac{i}{z}\,U_{n-1}\left(\sqrt{1-\frac{1}{z^2}}\right) /; n\in\mathbb{N}^+$$

01.03.16.0040.01

$$e^{i\,n\sec^{-1}(z)} = n\sum_{k=0}^{\left\lfloor\frac{n}{2}\right\rfloor}\frac{(-1)^k\,(n-k-1)!\,2^{n-2k-1}\,z^{2k-n}}{k!\,(n-2k)!} + i\sqrt{1-\frac{1}{z^2}}\sum_{k=0}^{\left\lfloor\frac{n-1}{2}\right\rfloor}(-1)^k\binom{n-k-1}{k}2^{n-2k-1}\,z^{2k-n+1} /; n\in\mathbb{N}^+$$

01.03.16.0041.01

$$e^{i\,n\sec^{-1}(z)} = T_n\left(\frac{1}{z}\right) + i\sqrt{1-\frac{1}{z^2}}\,U_{n-1}\left(\frac{1}{z}\right)$$

01.03.16.0042.01

$$e^{n\sinh^{-1}(z)} = z\sum_{k=0}^{\left\lfloor\frac{n-1}{2}\right\rfloor}(-1)^k\binom{n-k-1}{k}2^{n-2k-1}\left(z^2+1\right)^{\frac{n-1}{2}-k} + n\sum_{k=0}^{\left\lfloor\frac{n}{2}\right\rfloor}\frac{(-1)^k\,(n-k-1)!\,2^{n-2k-1}\left(z^2+1\right)^{\frac{n}{2}-k}}{k!\,(n-2k)!} /; n\in\mathbb{N}^+$$

01.03.16.0043.01

$$e^{n\sinh^{-1}(z)} = T_n\left(\sqrt{z^2+1}\right) + z\,U_{n-1}\left(\sqrt{z^2+1}\right) /; n\in\mathbb{N}^+$$

01.03.16.0044.01

$$e^{n\cosh^{-1}(z)} = \sqrt{z-1}\,\sqrt{z+1}\sum_{k=0}^{\left\lfloor\frac{n-1}{2}\right\rfloor}(-1)^k\binom{n-k-1}{k}2^{n-2k-1}\,z^{n-2k-1} + n\sum_{k=0}^{\left\lfloor\frac{n}{2}\right\rfloor}\frac{(-1)^k\,(n-k-1)!}{k!\,(n-2k)!}\,2^{n-2k-1}\,z^{n-2k} /; n\in\mathbb{N}^+$$

01.03.16.0045.01

$$e^{n\cosh^{-1}(z)} = T_n(z) + \sqrt{z-1}\,\sqrt{z+1}\,U_{n-1}(z) /; n\in\mathbb{N}^+$$

01.03.16.0046.01

$$e^{n\tanh^{-1}(z)} = n\sum_{k=0}^{\left\lfloor\frac{n}{2}\right\rfloor}\frac{(-1)^k\,(n-k-1)!\,2^{n-2k-1}\left(1-z^2\right)^{k-\frac{n}{2}}}{k!\,(n-2k)!} + \left(1-z^2\right)^{-\frac{n}{2}}\sum_{k=0}^{\left\lfloor\frac{n-1}{2}\right\rfloor}\binom{n}{2k+1}z^{2k+1} /; n\in\mathbb{N}^+$$

01.03.16.0047.01

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

01.03.16.0048.01

$$e^{n\coth^{-1}(z)} == n\sum_{k=0}^{\left\lfloor \frac{n}{2} \right\rfloor} \frac{(-1)^k\,(n-k-1)!\,2^{n-2k-1}}{k!\,(n-2k)!} \left(\frac{z^2-1}{z^2}\right)^{k-\frac{n}{2}} + \left(1-\frac{1}{z^2}\right)^{-\frac{n}{2}} \sum_{k=0}^{\left\lfloor \frac{n-1}{2} \right\rfloor} \binom{n}{2k+1} z^{-2k-1} /;\, n \in \mathbb{N}^+$$

01.03.16.0049.01

$$e^{n\coth^{-1}(z)} == n\sum_{k=0}^{\left\lfloor \frac{n}{2} \right\rfloor} \frac{(-1)^k\,(n-k-1)!\,2^{n-2k-1}}{k!\,(n-2k)!} \left(\frac{z^2-1}{z^2}\right)^{k-\frac{n}{2}} + \left(1-\frac{1}{z^2}\right)^{-\frac{n}{2}} \sum_{k=0}^{\left\lfloor \frac{n-1}{2} \right\rfloor} \binom{n}{2k+1} z^{-2k-1} /;\, n \in \mathbb{N}^+$$

01.03.16.0050.01

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

01.03.16.0051.01

$$e^{n\,\mathrm{csch}^{-1}(z)} == n\sum_{k=0}^{\left\lfloor \frac{n}{2} \right\rfloor} \frac{(-1)^k\,(n-k-1)!\,2^{n-2k-1}}{k!\,(n-2k)!} \left(1+\frac{1}{z^2}\right)^{\frac{n}{2}-k} + \frac{1}{z} \sum_{k=0}^{\left\lfloor \frac{n-1}{2} \right\rfloor} (-1)^k \binom{n-k-1}{k} 2^{n-2k-1} \left(1+\frac{1}{z^2}\right)^{\frac{n-1}{2}-k} /;\, n \in \mathbb{N}^+$$

01.03.16.0052.01

$$e^{n\,\mathrm{csch}^{-1}(z)} == T_n\left(\sqrt{1+\frac{1}{z^2}}\right) + \frac{1}{z}\, U_{n-1}\left(\sqrt{1+\frac{1}{z^2}}\right) /;\, n \in \mathbb{N}^+$$

01.03.16.0053.01

$$e^{n\,\mathrm{sech}^{-1}(z)} == n\sum_{k=0}^{\left\lfloor \frac{n}{2} \right\rfloor} \frac{(-1)^k\,(n-k-1)!\,2^{n-2k-1}\,z^{2k-n}}{k!\,(n-2k)!} + \sqrt{\frac{1-z}{1+z}}\,(1+z) \sum_{k=0}^{\left\lfloor \frac{n-1}{2} \right\rfloor} (-1)^k \binom{n-k-1}{k} 2^{n-2k-1}\, z^{2k-n} /;\, n \in \mathbb{N}^+$$

01.03.16.0054.01

$$e^{n\,\mathrm{sech}^{-1}(z)} == T_n\left(\frac{1}{z}\right) + \frac{1}{z}\sqrt{\frac{1-z}{1+z}}\,(1+z)\, U_{n-1}\left(\frac{1}{z}\right) /;\, n \in \mathbb{N}^+$$

01.03.16.0055.01

$$e^{\frac{i n}{2}\sin^{-1}(z)} == n\sum_{k=0}^{\left\lfloor \frac{n}{2} \right\rfloor} \frac{(-1)^k\,(n-k-1)!\,2^{\frac{n}{2}-k-1}\left(\sqrt{1-z^2}+1\right)^{\frac{n}{2}-k}}{k!\,(n-2k)!} +$$

$$i\,z\left(\sqrt{1-z^2}+1\right)^{\frac{n}{2}-1} \sum_{k=0}^{\left\lfloor \frac{n-1}{2} \right\rfloor} (-1)^k \binom{n-k-1}{k} 2^{n/2-k-1} \left(\frac{1-\sqrt{1-z^2}}{z^2}\right)^k /;\, n \in \mathbb{N}^+$$

01.03.16.0056.01

$$e^{\frac{i n}{2}\sin^{-1}(z)} == T_n\left(\frac{\sqrt{\sqrt{1-z^2}+1}}{\sqrt{2}}\right) + \frac{i z \sqrt{1-\sqrt{1-z^2}}}{\sqrt{2}\sqrt{z^2}} U_{n-1}\left(\frac{\sqrt{\sqrt{1-z^2}+1}}{\sqrt{2}}\right) /; n \in \mathbb{N}^+$$

01.03.16.0057.01

$$e^{\frac{i n}{2}\cos^{-1}(z)} == n \sum_{k=0}^{\left\lfloor \frac{n}{2} \right\rfloor} \frac{(-1)^k (n-k-1)!\, 2^{\frac{n}{2}-k-1} (z+1)^{\frac{n}{2}-k}}{k!\,(n-2k)!} + i \sqrt{1-z} \sum_{k=0}^{\left\lfloor \frac{n-1}{2} \right\rfloor} (-1)^k \binom{n-k-1}{k} 2^{n/2-k-1} (z+1)^{\frac{n-1}{2}-k} /; n \in \mathbb{N}^+$$

01.03.16.0058.01

$$e^{\frac{i n}{2}\cos^{-1}(z)} == T_n\left(\frac{\sqrt{z+1}}{\sqrt{2}}\right) + i \frac{\sqrt{1-z}}{\sqrt{2}} U_{n-1}\left(\frac{\sqrt{z+1}}{\sqrt{2}}\right) /; n \in \mathbb{N}^+$$

01.03.16.0059.01

$$e^{\frac{i n}{2}\tan^{-1}(z)} == n \sum_{k=0}^{\left\lfloor \frac{n}{2} \right\rfloor} \frac{(-1)^k (n-k-1)!\, 2^{\frac{n}{2}-k-1}}{k!\,(n-2k)!} \left(1+\frac{1}{\sqrt{z^2+1}}\right)^{\frac{n}{2}-k} +$$

$$\frac{i z}{\sqrt{z^2+1}} \left(1+\frac{1}{\sqrt{z^2+1}}\right)^{\frac{n}{2}-1} \sum_{k=0}^{\left\lfloor \frac{n-1}{2} \right\rfloor} (-1)^k \binom{n-k-1}{k} 2^{\frac{n}{2}-k-1} \left(\frac{\sqrt{z^2+1}}{\sqrt{z^2+1}+1}\right)^k /; n \in \mathbb{N}^+$$

01.03.16.0060.01

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

01.03.16.0061.01

$$e^{\frac{i n}{2}\cot^{-1}(z)} == n \sum_{k=0}^{\left\lfloor \frac{n}{2} \right\rfloor} \frac{(-1)^k (n-k-1)!\, 2^{\frac{n}{2}-k-1}}{k!\,(n-2k)!} \left(\frac{\sqrt{-z^2}}{\sqrt{-z^2-1}}+1\right)^{\frac{n}{2}-k} +$$

$$\frac{i}{z\sqrt{1+\frac{1}{z^2}}} \left(\frac{\sqrt{-z^2}}{\sqrt{-z^2-1}}+1\right)^{\frac{n}{2}-1} \sum_{k=0}^{\left\lfloor \frac{n-1}{2} \right\rfloor} (-1)^k \binom{n-k-1}{k} 2^{\frac{n}{2}-k-1} \left(1-\left(\sqrt{1+\frac{1}{z^2}}-1\right) z^2\right)^k /; n \in \mathbb{N}^+$$

01.03.16.0062.01

$$e^{\frac{i n}{2}\cot^{-1}(z)} == T_n\left(\frac{1}{\sqrt{2}}\sqrt{\frac{\sqrt{-z^2}}{\sqrt{-z^2-1}}+1}\right) + \frac{i z}{\sqrt{2}} \sqrt{\frac{1}{z^2}} \sqrt{1-\frac{\sqrt{-z^2}}{\sqrt{-z^2-1}}}\; U_{n-1}\left(\frac{1}{\sqrt{2}}\sqrt{\frac{\sqrt{-z^2}}{\sqrt{-z^2-1}}+1}\right) /; n \in \mathbb{N}^+$$

01.03.16.0063.01

$$e^{\frac{i n}{2} \csc^{-1}(z)} = n \sum_{k=0}^{\left\lfloor \frac{n}{2} \right\rfloor} \frac{(-1)^k (n-k-1)!\, 2^{\frac{n}{2}-k-1}}{k!\, (n-2k)!} \left(\sqrt{1-\frac{1}{z^2}} + 1 \right)^{\frac{n}{2}-k} + \frac{i}{z} \left(\frac{\sqrt{z^2-1}}{\sqrt{z^2}} + 1 \right)^{\frac{n}{2}-1} \sum_{k=0}^{\left\lfloor \frac{n-1}{2} \right\rfloor} (-1)^k \binom{n-k-1}{k} 2^{\frac{n}{2}-k-1} \left(z^2 - \sqrt{z^2} \sqrt{z^2-1} \right)^k /; n \in \mathbb{N}^+$$

01.03.16.0064.01

$$e^{\frac{i n}{2} \csc^{-1}(z)} = T_n\left(\frac{1}{\sqrt{2}} \sqrt{\sqrt{1-\frac{1}{z^2}} + 1} \right) + \frac{i z}{\sqrt{2}} \sqrt{\frac{1}{z^2}} \sqrt{1-\sqrt{1-\frac{1}{z^2}}}\; U_{n-1}\left(\frac{1}{\sqrt{2}} \sqrt{\sqrt{1-\frac{1}{z^2}} + 1} \right) /; n \in \mathbb{N}^+$$

01.03.16.0065.01

$$e^{\frac{i n}{2} \sec^{-1}(z)} = n \sum_{k=0}^{\left\lfloor \frac{n}{2} \right\rfloor} \frac{(-1)^k (n-k-1)!\, 2^{\frac{n}{2}-k-1}}{k!\, (n-2k)!} \left(\frac{z+1}{z} \right)^{\frac{n}{2}-k} + i \left(\frac{z+1}{z} \right)^{\frac{n-1}{2}} \sqrt{\frac{z-1}{z}} \sum_{k=0}^{\left\lfloor \frac{n-1}{2} \right\rfloor} (-1)^k \binom{n-k-1}{k} 2^{\frac{n}{2}-k-1} \left(\frac{z}{z+1} \right)^k /; n \in \mathbb{N}^+$$

01.03.16.0066.01

$$e^{\frac{i n}{2} \sec^{-1}(z)} = T_n\left(\frac{1}{\sqrt{2}} \sqrt{\frac{z+1}{z}} \right) + \frac{i}{\sqrt{2}} \sqrt{\frac{z-1}{z}}\; U_{n-1}\left(\frac{1}{\sqrt{2}} \sqrt{\frac{z+1}{z}} \right) /; n \in \mathbb{N}^+$$

01.03.16.0067.01

$$e^{\frac{n}{2} \sinh^{-1}(z)} = n \sum_{k=0}^{\left\lfloor \frac{n}{2} \right\rfloor} \frac{(-1)^k (n-k-1)!\, 2^{\frac{n}{2}-k-1} \left(\sqrt{z^2+1} + 1 \right)^{\frac{n}{2}-k}}{k!\, (n-2k)!} + z \left(\sqrt{z^2+1} + 1 \right)^{\frac{n}{2}-1} \sum_{k=0}^{\left\lfloor \frac{n-1}{2} \right\rfloor} (-1)^k \binom{n-k-1}{k} 2^{\frac{n}{2}-k-1} \left(\frac{\sqrt{z^2+1} - 1}{z^2} \right)^k /; n \in \mathbb{N}^+$$

01.03.16.0068.01

$$e^{\frac{n}{2} \sinh^{-1}(z)} = T_n\left(\frac{\sqrt{\sqrt{z^2+1} + 1}}{\sqrt{2}} \right) + \frac{z}{\sqrt{2} \sqrt{\sqrt{z^2+1} + 1}}\; U_{n-1}\left(\frac{\sqrt{\sqrt{z^2+1} + 1}}{\sqrt{2}} \right) /; n \in \mathbb{N}^+$$

01.03.16.0069.01

$$e^{\frac{n}{2} \cosh^{-1}(z)} = n \sum_{k=0}^{\left\lfloor \frac{n}{2} \right\rfloor} \frac{(-1)^k (n-k-1)!\, 2^{\frac{n}{2}-k-1} (z+1)^{\frac{n}{2}-k}}{k!\, (n-2k)!} + \sqrt{z-1} \sum_{k=0}^{\left\lfloor \frac{n-1}{2} \right\rfloor} (-1)^k \binom{n-k-1}{k} 2^{\frac{n}{2}-k-1} (z+1)^{\frac{n-1}{2}-k} /; n \in \mathbb{N}^+$$

01.03.16.0070.01

$$e^{\frac{n}{2} \cosh^{-1}(z)} = T_n\left(\frac{\sqrt{z+1}}{\sqrt{2}} \right) + \frac{\sqrt{z-1}}{\sqrt{2}}\; U_{n-1}\left(\frac{\sqrt{z+1}}{\sqrt{2}} \right) /; n \in \mathbb{N}^+$$

01.03.16.0071.01

$$e^{\frac{n}{2}\tanh^{-1}(z)} = n\sum_{k=0}^{\left\lfloor\frac{n}{2}\right\rfloor}\frac{(-1)^k\,(n-k-1)!\,2^{\frac{n}{2}-k-1}}{k!\,(n-2k)!}\left(1+\frac{1}{\sqrt{1-z^2}}\right)^{\frac{n}{2}-k} + \frac{z}{\sqrt{1-z^2}}\left(1+\frac{1}{\sqrt{1-z^2}}\right)^{\frac{n}{2}-1}\sum_{k=0}^{\left\lfloor\frac{n-1}{2}\right\rfloor}(-1)^k\binom{n-k-1}{k}2^{n/2-k-1}\left(\frac{\sqrt{1-z^2}}{\sqrt{1-z^2}+1}\right)^k /;\, n\in\mathbb{N}^+$$

01.03.16.0072.01

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

01.03.16.0073.01

$$e^{\frac{n}{2}\coth^{-1}(z)} = n\sum_{k=0}^{\left\lfloor\frac{n}{2}\right\rfloor}\frac{(-1)^k\,(n-k-1)!\,2^{\frac{n}{2}-k-1}}{k!\,(n-2k)!}\left(\frac{\sqrt{z^2}}{\sqrt{z^2-1}}+1\right)^{\frac{n}{2}-k} + \frac{1}{z\sqrt{1-\frac{1}{z^2}}}\left(\frac{\sqrt{z^2}}{\sqrt{z^2-1}}+1\right)^{\frac{n}{2}-1}\sum_{k=0}^{\left\lfloor\frac{n-1}{2}\right\rfloor}(-1)^k\binom{n-k-1}{k}2^{\frac{n}{2}-k-1}\left(\left(\sqrt{1-\frac{1}{z^2}}-1\right)z^2+1\right)^k /;\, n\in\mathbb{N}^+$$

01.03.16.0074.01

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

01.03.16.0075.01

$$e^{\frac{n}{2}\operatorname{csch}^{-1}(z)} = n\sum_{k=0}^{\left\lfloor\frac{n}{2}\right\rfloor}\frac{(-1)^k\,(n-k-1)!\,2^{\frac{n}{2}-k-1}}{k!\,(n-2k)!}\left(\sqrt{1+\frac{1}{z^2}}+1\right)^{\frac{n}{2}-k} + \frac{1}{z}\left(\sqrt{1+\frac{1}{z^2}}+1\right)^{\frac{n}{2}-1}\sum_{k=0}^{\left\lfloor\frac{n-1}{2}\right\rfloor}\binom{n-k-1}{k}2^{\frac{n}{2}-k-1}\left(z^2+\sqrt{-z^2}\,\sqrt{-z^2-1}\right)^k /;\, n\in\mathbb{N}^+$$

01.03.16.0076.01

$$e^{\frac{n}{2}\operatorname{csch}^{-1}(z)} = T_n\left(\frac{1}{\sqrt{2}}\sqrt{\sqrt{1+\frac{1}{z^2}}+1}\right)-\frac{z}{\sqrt{2}}\sqrt{-\frac{1}{z^2}}\sqrt{1-\sqrt{1+\frac{1}{z^2}}}\;U_{n-1}\left(\frac{1}{\sqrt{2}}\sqrt{\sqrt{1+\frac{1}{z^2}}+1}\right) /;\, n\in\mathbb{N}^+$$

01.03.16.0077.01

$$e^{\frac{n}{2}\operatorname{sech}^{-1}(z)} = n\sum_{k=0}^{\left\lfloor\frac{n}{2}\right\rfloor}\frac{(-1)^k\,(n-k-1)!\,2^{\frac{n}{2}-k-1}}{k!\,(n-2k)!}\left(\frac{z+1}{z}\right)^{\frac{n}{2}-k}+\sqrt{\frac{1-z}{z}}\sum_{k=0}^{\left\lfloor\frac{n-1}{2}\right\rfloor}(-1)^k\binom{n-k-1}{k}2^{\frac{n}{2}-k-1}\left(\frac{z+1}{z}\right)^{\frac{n-1}{2}-k} /;\, n\in\mathbb{N}^+$$

01.03.16.0078.01

$$e^{\frac{n}{2}\operatorname{sech}^{-1}(z)} = T_n\left(\frac{1}{\sqrt{2}}\sqrt{\frac{z+1}{z}}\right) + \frac{1}{\sqrt{2}}\sqrt{\frac{1-z}{z}}\,U_{n-1}\left(\frac{1}{\sqrt{2}}\sqrt{\frac{z+1}{z}}\right) /;\ n \in \mathbb{N}^+$$

Addition formulas

01.03.16.0082.01

$$e^{z_1+z_2} = e^{z_1}\,e^{z_2}$$

01.03.16.0083.01

$$e^{z_1-z_2} = e^{z_1}\,e^{-z_2}$$

01.03.16.0084.01

$$e^{x+i y} = e^x \cos(y) + e^x\, i \sin(y)$$

01.03.16.0085.01

$$e^{x-i y} = e^x \cos(y) - e^x\, i \sin(y)$$

Half-angle formulas

01.03.16.0106.01

$$e^{z/2} = \sqrt{e^z} /;\ -\pi < \operatorname{Im}(z) \le \pi$$

01.03.16.0107.01

$$e^{z/2} = (-1)^k \sqrt{e^z} /;\ -2\pi k - \pi < \operatorname{Im}(z) \le \pi - 2\pi k \land k \in \mathbb{Z}$$

01.03.16.0086.01

$$e^{z/2} = \sqrt{e^z} \exp\left(-i\pi \left\lfloor \frac{\pi - \operatorname{Im}(z)}{2\pi} \right\rfloor\right)$$

Multiple arguments

Argument involving numeric multiples of variable

01.03.16.0087.01

$$e^{\pi i z} = (-1)^z$$

01.03.16.0088.01

$$e^{2z} = (e^z)^2$$

01.03.16.0089.01

$$e^{3z} = (e^z)^3$$

Argument involving symbolic multiples of variable

01.03.16.0090.01

$$e^{n x} = (e^x)^n /;\ n \in \mathbb{Z} \lor x \in \mathbb{R}$$

01.03.16.0091.01

$$e^{a z} = (e^z)^a /;\ -\pi < \operatorname{Im}(z) \le \pi$$

01.03.16.0108.01

$$e^{a z} = (e^z)^a\, e^{-2 i \pi a k} /;\ -\pi - 2\pi k < \operatorname{Im}(z) \le \pi - 2\pi k \land k \in \mathbb{Z}$$

01.03.16.0092.01

$$e^{z_1 z_2} = (e^{z_1})^{z_2} \exp\left(-2 i \pi z_2 \left\lfloor \frac{\pi - \operatorname{Im}(z_1)}{2\pi} \right\rfloor\right)$$

Some functions of arguments

01.03.16.0001.01

$$\exp(a\,(b\,z^c)^m) = \cosh(a\,b^m\,z^{m\,c}) + \frac{(b\,z^c)^m}{b^m\,z^{m\,c}} \sinh(a\,b^m\,z^{m\,c}) \;/;\; -\pi < \arg(b) + \operatorname{Im}(c\log(z)) \leq \pi$$

01.03.16.0109.01

$$e^{\sqrt{z^2}} = e^z \;/;\; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.03.16.0110.01

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

01.03.16.0002.01

$$e^{\sqrt{z^2}} = \cosh(z) + \frac{\sqrt{z^2}}{z} \sinh(z)$$

01.03.16.0111.01

$$e^{a\sqrt{b\,z^2}} = \cosh\left(a\sqrt{b}\,z\right) + \frac{\sqrt{b\,z^2}}{\sqrt{b}\,z} \sinh\left(a\sqrt{b}\,z\right)$$

01.03.16.0112.01

$$e^{a\sqrt[3]{b\,z^3}} = \frac{1}{3\,b^{2/3}\,z^2}\, e^{-\frac{1}{2} a \sqrt[3]{b}\,z} \left(e^{\frac{3}{2} a \sqrt[3]{b}\,z} \left(\sqrt[3]{b}\,z\sqrt[3]{b\,z^3} + \left(b\,z^3\right)^{2/3} + b^{2/3}\,z^2\right) - \left(\sqrt[3]{b\,z^3} - \sqrt[3]{b}\,z\right)\left(\sqrt{3}\sin\left(\frac{1}{2}\sqrt{3}\,a\sqrt[3]{b}\,z\right)\sqrt[3]{b\,z^3} + \left(2\,z\sqrt[3]{b} + \sqrt[3]{b\,z^3}\right)\cos\left(\frac{1}{2}\sqrt{3}\,a\sqrt[3]{b}\,z\right)\right)\right)$$

01.03.16.0113.01

$$e^{a\sqrt[4]{b\,z^4}} = \frac{1}{2\,b^{3/4}\,z^3}\left(z\left(\sqrt{b}\,z^2 + \sqrt{b\,z^4}\right)\cosh\left(a\sqrt[4]{b}\,z\right)\sqrt[4]{b} - \left(\sqrt{b\,z^4} - \sqrt{b}\,z^2\right)\left(z\cos\left(a\sqrt[4]{b}\,z\right)\sqrt[4]{b} + \sqrt[4]{b\,z^4}\,\sin\left(a\sqrt[4]{b}\,z\right)\right) + \sqrt[4]{b\,z^4}\left(\sqrt{b}\,z^2 + \sqrt{b\,z^4}\right)\sinh\left(a\sqrt[4]{b}\,z\right)\right)$$

01.03.16.0114.01

$$e^{a\,(b\,z^n)^{1/n}} = \sum_{i=0}^{n-1} \frac{\left(a\,(b\,z^n)^{1/n}\right)^i}{i!}\; {}_1F_n\left(1;\, \frac{i+1}{n},\, \frac{i+2}{n},\, \ldots,\, \frac{i+n}{n};\, \frac{a^n\,b\,z^n}{n^n}\right) \;/;\; n \in \mathbb{N}^+$$

Products, sums, and powers of the direct function

Products of the direct function

01.03.16.0093.01

$$e^{z_1}\,e^{z_2} = e^{z_1+z_2}$$

Powers of the direct function

01.03.16.0094.01

$$(e^z)^n = e^{n\,z} \;/;\; z \in \mathbb{R} \vee n \in \mathbb{Z}$$

01.03.16.0095.01

$$(e^z)^a = e^{a\,z} \;/;\; -\pi < \operatorname{Im}(z) \leq \pi$$

01.03.16.0115.01

$$(e^z)^a = e^{a(2 i \pi k + z)} /; -2 \pi k - \pi < \operatorname{Im}(z) \leq \pi - 2 \pi k \wedge k \in \mathbb{Z}$$

01.03.16.0096.01

$$(e^z)^a = e^{a z} \exp\left(2 i \pi a \left\lfloor \frac{\pi - \operatorname{Im}(z)}{2 \pi} \right\rfloor\right)$$

Identities

Recurrence identities

Consecutive neighbors

01.03.17.0001.01

$$e^z = \frac{1}{e} e^{z+1}$$

01.03.17.0002.01

$$e^z = e\, e^{z-1}$$

Distant neighbors

01.03.17.0003.01

$$e^z = \frac{1}{e^n} e^{z+n} /; n \in \mathbb{Z}$$

Functional identities

01.03.17.0004.01

$$w(z_1 + z_2) = w(z_1)\, w(z_2) /; w(z) = e^z$$

01.03.17.0005.01

$$w(z) = \frac{1}{w(-z)} /; w(z) = e^z$$

Complex characteristics

Real part

01.03.19.0001.01

$$\operatorname{Re}\left(e^{x + i y}\right) = e^x \cos(y)$$

01.03.19.0009.01

$$\operatorname{Re}(e^z) = e^{\operatorname{Re}(z)} \cos(\operatorname{Im}(z))$$

Imaginary part

01.03.19.0002.01

$$\operatorname{Im}\left(e^{x + i y}\right) = e^x \sin(y)$$

01.03.19.0010.01

$$\operatorname{Im}(e^z) = e^{\operatorname{Re}(z)} \sin(\operatorname{Im}(z))$$

Absolute value

01.03.19.0003.01

$$\left|e^{x+i y}\right| = e^x$$

01.03.19.0011.01

$$|e^z| = e^{\mathrm{Re}(z)}$$

Argument

01.03.19.0004.01

$$\arg\left(e^{x+i y}\right) = \tan^{-1}(\cos(y), \sin(y))$$

01.03.19.0005.01

$$\arg(e^z) = \mathrm{Im}(z) \;/;\; -\pi < \mathrm{Im}(z) \leq \pi$$

01.03.19.0006.01

$$\arg(e^z) = \mathrm{Im}(z) + 2\pi \left\lfloor \frac{\pi - \mathrm{Im}(z)}{2\pi} \right\rfloor$$

01.03.19.0012.01

$$\arg\left(e^{i z}\right) = \mathrm{Re}(z) + 2\pi \left\lfloor \frac{\pi - \mathrm{Re}(z)}{2\pi} \right\rfloor$$

01.03.19.0013.01

$$\arg(e^z) = \pi - (\pi - \mathrm{Im}(z)) \bmod (2\pi)$$

01.03.19.0014.01

$$\arg\left(e^{i z}\right) = \pi - (\pi - \mathrm{Re}(z)) \bmod (2\pi)$$

01.03.19.0015.01

$$|e^z| = \tan^{-1}(\cos(\mathrm{Im}(z)), \sin(\mathrm{Im}(z)))$$

Conjugate value

01.03.19.0007.01

$$\overline{e^{x+i y}} = e^x \cos(y) - i\, e^x \sin(y)$$

01.03.19.0016.01

$$\overline{e^z} = e^{\mathrm{Re}(z)} \cos(\mathrm{Im}(z)) - i\, e^{\mathrm{Re}(z)} \sin(\mathrm{Im}(z))$$

Signum value

01.03.19.0017.01

$$\mathrm{sgn}\left(e^{x+i y}\right) = e^{i y}$$

01.03.19.0008.01

$$\mathrm{sgn}(e^z) = e^{i\, \mathrm{Im}(z)}$$

Differentiation

Low-order differentiation

01.03.20.0001.01

$$\frac{\partial e^z}{\partial z} = e^z$$

01.03.20.0002.01

$$\frac{\partial^2 e^z}{\partial z^2} = e^z$$

Symbolic differentiation

01.03.20.0003.02

$$\frac{\partial^n e^z}{\partial z^n} = e^z \;/;\; n \in \mathbb{N}$$

01.03.20.0004.01

$$\frac{\partial^n f(e^z)}{\partial z^n} = \sum_{k=1}^{n} e^{k z}\, \mathcal{S}_n^{(k)}\, f^{(k)}(e^z) \;/;\; n \in \mathbb{N}^+$$

01.03.20.0008.01

$$\frac{\partial^n e^{z^a}}{\partial z^n} = e^{z^a} \sum_{k=0}^{n} \sum_{j=0}^{k} \frac{(-1)^j\, (a\, k - a\, j - n + 1)_n}{j!\, (k-j)!\, z^{n-a\,k}} \;/;\; n \in \mathbb{N}$$

01.03.20.0005.02

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

01.03.20.0009.01

$$\frac{\partial^n e^{1/z}}{\partial z^n} = (-1)^n\, n!\, z^{-n}\, e^{1/z}\, L_n^{-1}\!\left(-\frac{1}{z}\right) \;/;\; n \in \mathbb{N}$$

01.03.20.0006.01

$$\frac{\partial^n e^{\frac{1}{z}}}{\partial z^n} = (-1)^n\, n\, z^{-n-1}\, (n-1)!\, e^{\frac{1}{z}}\; {}_1F_1\!\left(1-n;\, 2;\, -\frac{1}{z}\right) \;/;\; n \in \mathbb{N}^+$$

Fractional integro-differentiation

01.03.20.0007.01

$$\frac{\partial^\alpha e^z}{\partial z^\alpha} = e^z\, Q(-\alpha, 0, z)$$

Integration

Indefinite integration

Involving only one direct function

01.03.21.0035.01

$$\int a^{c\,z}\, dz = \frac{a^{c\,z}}{c \log(a)}$$

01.03.21.0036.01

$$\int a^z\, dz = \frac{a^z}{\log(a)}$$

01.03.21.0037.01

$$\int e^{b+a z}\, dz = \frac{e^{b+a z}}{a}$$

01.03.21.0038.01

$$\int e^{a z}\, dz = \frac{e^{a z}}{a}$$

01.03.21.0039.01

$$\int e^{z}\, dz = e^{z}$$

Involving one direct function and elementary functions

Involving power function

Involving power

Power arguments and base a

01.03.21.0040.01

$$\int a^{b z^r}\, dz = -\frac{z\, \Gamma\left(\frac{1}{r}, -b z^r \log(a)\right) (-b z^r \log(a))^{-1/r}}{r}$$

01.03.21.0041.01

$$\int a^{b z^2}\, dz = \frac{\sqrt{\pi}\, \operatorname{erfi}\left(\sqrt{b}\, z \log^{\frac{1}{2}}(a)\right)}{2 \sqrt{b}\, \log^{\frac{1}{2}}(a)}$$

01.03.21.0042.01

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

01.03.21.0043.01

$$\int a^{b (z^r)^p}\, dz = -\frac{z \left(-b \log(a) (z^r)^p\right)^{-\frac{1}{p r}} \Gamma\left(\frac{1}{p r}, -b \log(a) (z^r)^p\right)}{p r}$$

01.03.21.0044.01

$$\int a^{b (z^r)^{1/r}}\, dz = \frac{a^{b (z^r)^{1/r}} z (z^r)^{-1/r}}{b \log(a)}$$

01.03.21.0045.01

$$\int a^{b \sqrt{z^2}}\, dz = \frac{a^{b \sqrt{z^2}} \sqrt{z^2}}{b z \log(a)}$$

Power arguments and base e

01.03.21.0046.01

$$\int e^{a z^r} \, dz = -\frac{z \left(-a z^r\right)^{-1/r}}{r} \Gamma\left(\frac{1}{r}, -a z^r\right)$$

01.03.21.0047.01

$$\int e^{a z^2} \, dz = \frac{\sqrt{\pi} \operatorname{erfi}\left(\sqrt{a} \, z\right)}{2 \sqrt{a}}$$

01.03.21.0048.01

$$\int e^{a \sqrt{z}} \, dz = 2 e^{a \sqrt{z}} \left(\frac{\sqrt{z}}{a} - \frac{1}{a^2}\right)$$

01.03.21.0049.01

$$\int e^{a (z^r)^p} \, dz = -\frac{z \left(-a (z^r)^p\right)^{-\frac{1}{p r}} \Gamma\left(\frac{1}{p r}, -a (z^r)^p\right)}{p r}$$

01.03.21.0050.01

$$\int e^{a (z^r)^{1/r}} \, dz = \frac{e^{a (z^r)^{1/r}} z (z^r)^{-1/r}}{a}$$

01.03.21.0051.01

$$\int e^{a \sqrt{z^2}} \, dz = \frac{e^{a \sqrt{z^2}} \sqrt{z^2}}{a z}$$

Involving $z^{\alpha-1}$, arguments $b z$ and base a

01.03.21.0052.01

$$\int z^{\alpha-1} a^{b z} \, dz = -z^{\alpha} \Gamma(\alpha, -b z \log(a)) (-b z \log(a))^{-\alpha}$$

01.03.21.0053.01

$$\int \frac{a^{b z}}{z} \, dz = \operatorname{Ei}(b z \log(a))$$

01.03.21.0054.01

$$\int z^{\alpha-1} a^z \, dz = -z^{\alpha} \Gamma(\alpha, -z \log(a)) (-z \log(a))^{-\alpha}$$

01.03.21.0055.01

$$\int \frac{a^z}{z} \, dz = \operatorname{Ei}(z \log(a))$$

Involving $z^{\alpha-1}$and arguments $a z$

01.03.21.0056.01

$$\int z^{\alpha-1} e^{a z} \, dz = -z^{\alpha} (-a z)^{-\alpha} \Gamma(\alpha, -a z)$$

01.03.21.0057.01

$$\int z^{\alpha-1} e^z \, dz = -(-z)^{-\alpha} z^{\alpha} \Gamma(\alpha, -z)$$

01.03.21.0058.01

$$\int z^n e^{a z} \, dz = a^{-n-1} (-1)^n \, \Gamma(n+1, -a z) \,/;\, n \in \mathbb{Z}$$

01.03.21.0059.01

$$\int z^n e^{a z} \, dz = -(-a)^{-n-1} \, n! \, e^{a z} \sum_{k=0}^{n} \frac{(-a z)^k}{k!} \,/;\, n \in \mathbb{N}$$

01.03.21.0060.01

$$\int \frac{e^{a z}}{z^n} \, dz = \frac{a^{n-1} \operatorname{Ei}(a z)}{(n-1)!} - \frac{z^{-n} e^{a z}}{a} \sum_{k=1}^{n-1} \frac{(-a z)^k}{(1-n)_k} \,/;\, n \in \mathbb{N}^+$$

01.03.21.0061.01

$$\int z^n e^{a z} \, dz = (-a)^{-n-1} \left(\frac{(-1)^{n-1} \operatorname{Ei}(a z)}{(-n-1)!} - e^{a z} \sum_{k=0}^{n} \frac{(-a z)^k}{(n+1)_{k-n}} + e^{a z} \sum_{k=n+1}^{-1} \frac{(-a z)^k}{(n+1)_{k-n}} \right) /;\, n \in \mathbb{Z}$$

01.03.21.0062.01

$$\int z \, e^{a z} \, dz = \frac{e^{a z} (a z - 1)}{a^2}$$

01.03.21.0063.01

$$\int \sqrt{z^2} \, e^{a z} \, dz = \frac{e^{a z} \sqrt{z^2} \, (a z - 1)}{a^2 z}$$

01.03.21.0064.01

$$\int z^2 e^{a z} \, dz = \frac{e^{a z} \left(a^2 z^2 - 2 a z + 2\right)}{a^3}$$

01.03.21.0065.01

$$\int z^3 e^{a z} \, dz = \frac{e^{a z} \left(a^3 z^3 - 3 a^2 z^2 + 6 a z - 6\right)}{a^4}$$

01.03.21.0066.01

$$\int z^4 e^{a z} \, dz = \frac{e^{a z} \left(a^4 z^4 - 4 a^3 z^3 + 12 a^2 z^2 - 24 a z + 24\right)}{a^5}$$

01.03.21.0067.01

$$\int z^5 e^{a z} \, dz = \frac{e^{a z} \left(a^5 z^5 - 5 a^4 z^4 + 20 a^3 z^3 - 60 a^2 z^2 + 120 a z - 120\right)}{a^6}$$

01.03.21.0068.01

$$\int z^6 e^{a z} \, dz = \frac{e^{a z} \left(a^6 z^6 - 6 a^5 z^5 + 30 a^4 z^4 - 120 a^3 z^3 + 360 a^2 z^2 - 720 a z + 720\right)}{a^7}$$

01.03.21.0069.01

$$\int z^7 e^{a z} \, dz = \frac{e^{a z} \left(a^7 z^7 - 7 a^6 z^6 + 42 a^5 z^5 - 210 a^4 z^4 + 840 a^3 z^3 - 2520 a^2 z^2 + 5040 a z - 5040\right)}{a^8}$$

01.03.21.0070.01

$$\int z^8 e^{a z} \, dz = \frac{1}{a^9} \left(e^{a z} \left(a^8 z^8 - 8 a^7 z^7 + 56 a^6 z^6 - 336 a^5 z^5 + 1680 a^4 z^4 - 6720 a^3 z^3 + 20\,160 a^2 z^2 - 40\,320 a z + 40\,320\right)\right)$$

01.03.21.0071.01

$$\int \frac{e^{a z}}{z} \, dz = \text{Ei}(a z)$$

01.03.21.0072.01

$$\int \frac{e^{a z}}{z^2} \, dz = a \, \text{Ei}(a z) - \frac{e^{a z}}{z}$$

01.03.21.0073.01

$$\int \frac{e^{a z}}{z^3} \, dz = \frac{1}{2} \left(a^2 \, \text{Ei}(a z) - \frac{e^{a z} (a z + 1)}{z^2} \right)$$

01.03.21.0074.01

$$\int \frac{e^{a z}}{z^4} \, dz = \frac{a^3 z^3 \, \text{Ei}(a z) - e^{a z} (a z (a z + 1) + 2)}{6 z^3}$$

01.03.21.0075.01

$$\int \frac{e^{a z}}{z^5} \, dz = \frac{a^4 z^4 \, \text{Ei}(a z) - e^{a z} (a z (a z (a z + 1) + 2) + 6)}{24 z^4}$$

01.03.21.0076.01

$$\int z^{n+\frac{1}{2}} e^{a z} \, dz = \frac{a^{-n-2} (-1)^{n-1} \sqrt{-a z}}{\sqrt{z}} \Gamma\left(n + \frac{3}{2}, -a z\right) /; n \in \mathbb{Z}$$

01.03.21.0077.01

$$\int z^{n+\frac{1}{2}} e^{a z} \, dz = \frac{a^{-n-2} (-1)^{n-1} \sqrt{-a z}}{\sqrt{z}} \left(\text{erfc}\left(\sqrt{-a z}\right) \Gamma\left(n + \frac{3}{2}\right) + e^{a z} \sum_{k=0}^{n} \frac{(-a z)^{k+\frac{1}{2}}}{\left(n + \frac{3}{2}\right)_{k-n}} - e^{a z} \sum_{k=n+1}^{-1} \frac{(-a z)^{k+\frac{1}{2}}}{\left(n + \frac{3}{2}\right)_{k-n}} \right) /; n \in \mathbb{Z}$$

01.03.21.0078.01

$$\int \sqrt{z} \, e^{a z} \, dz = \frac{e^{a z} \sqrt{z}}{a} - \frac{\sqrt{\pi} \, \text{erfi}\left(\sqrt{a} \sqrt{z}\right)}{2 a^{3/2}}$$

01.03.21.0079.01

$$\int z^{3/2} e^{a z} \, dz = e^{a z} \left(\frac{z^{3/2}}{a} - \frac{3 \sqrt{z}}{2 a^2} \right) + \frac{3 \sqrt{\pi} \, \text{erfi}\left(\sqrt{a} \sqrt{z}\right)}{4 a^{5/2}}$$

01.03.21.0080.01

$$\int z^{5/2} e^{a z} \, dz = e^{a z} \left(-\frac{5 z^{3/2}}{2 a^2} + \frac{z^{5/2}}{a} + \frac{15 \sqrt{z}}{4 a^3} \right) - \frac{15 \sqrt{\pi} \, \text{erfi}\left(\sqrt{a} \sqrt{z}\right)}{8 a^{7/2}}$$

01.03.21.0081.01

$$\int z^{7/2} e^{a z} \, dz = e^{a z} \left(\frac{35 z^{3/2}}{4 a^3} - \frac{7 z^{5/2}}{2 a^2} + \frac{z^{7/2}}{a} - \frac{105 \sqrt{z}}{8 a^4} \right) + \frac{105 \sqrt{\pi} \, \text{erfi}\left(\sqrt{a} \sqrt{z}\right)}{16 a^{9/2}}$$

01.03.21.0082.01

$$\int z^{9/2} e^{a z} \, dz = e^{a z} \left(-\frac{315 z^{3/2}}{8 a^4} + \frac{63 z^{5/2}}{4 a^3} - \frac{9 z^{7/2}}{2 a^2} + \frac{z^{9/2}}{a} + \frac{945 \sqrt{z}}{16 a^5} \right) - \frac{945 \sqrt{\pi} \, \text{erfi}\left(\sqrt{a} \sqrt{z}\right)}{32 a^{11/2}}$$

01.03.21.0083.01

$$\int \frac{e^{a z}}{\sqrt{z}}\, dz = \frac{\sqrt{\pi}\, \operatorname{erfi}\left(\sqrt{a}\, \sqrt{z}\right)}{\sqrt{a}}$$

01.03.21.0084.01

$$\int \frac{e^{a z}}{z^{3/2}}\, dz = 2 \sqrt{a}\, \sqrt{\pi}\, \operatorname{erfi}\left(\sqrt{a}\, \sqrt{z}\right) - \frac{2 e^{a z}}{\sqrt{z}}$$

01.03.21.0085.01

$$\int \frac{e^{a z}}{\sqrt{z^3}}\, dz = \frac{2 z \left(\sqrt{a}\, \sqrt{\pi}\, \sqrt{z}\, \operatorname{erfi}\left(\sqrt{a}\, \sqrt{z}\right) - e^{a z}\right)}{\sqrt{z^3}}$$

01.03.21.0086.01

$$\int \frac{e^{a z}}{z^{3/2}}\, dz = 2 \sqrt{a}\, \sqrt{\pi}\, \operatorname{erfi}\left(\sqrt{a}\, \sqrt{z}\right) - \frac{2 e^{a z}}{\sqrt{z}}$$

01.03.21.0087.01

$$\int \frac{e^{a z}}{z^{5/2}}\, dz = \frac{4}{3} \sqrt{\pi}\, \operatorname{erfi}\left(\sqrt{a}\, \sqrt{z}\right) a^{3/2} + e^{a z} \left(-\frac{4 a}{3 \sqrt{z}} - \frac{2}{3 z^{3/2}}\right)$$

01.03.21.0088.01

$$\int \frac{e^{a z}}{z^{7/2}}\, dz = \frac{8}{15} \sqrt{\pi}\, \operatorname{erfi}\left(\sqrt{a}\, \sqrt{z}\right) a^{5/2} + e^{a z} \left(-\frac{8 a^2}{15 \sqrt{z}} - \frac{4 a}{15 z^{3/2}} - \frac{2}{5 z^{5/2}}\right)$$

01.03.21.0089.01

$$\int \frac{e^{a z}}{z^{9/2}}\, dz = \frac{16}{105} \sqrt{\pi}\, \operatorname{erfi}\left(\sqrt{a}\, \sqrt{z}\right) a^{7/2} + e^{a z} \left(-\frac{16 a^3}{105 \sqrt{z}} - \frac{8 a^2}{105 z^{3/2}} - \frac{4 a}{35 z^{5/2}} - \frac{2}{7 z^{7/2}}\right)$$

Involving $z^{\alpha-1}$, arguments $b z + d$ and base a

01.03.21.0090.01

$$\int z^{\alpha-1} a^{d+b z}\, dz = -a^d z^\alpha\, \Gamma(\alpha, -b z \log(a)) (-b z \log(a))^{-\alpha}$$

01.03.21.0091.01

$$\int \frac{a^{d+b z}}{z}\, dz = a^d\, \operatorname{Ei}(b z \log(a))$$

Involving $z^{\alpha-1}$and arguments $a z + b$

01.03.21.0092.01

$$\int z^{\alpha-1} e^{b+a z}\, dz = -e^b z^\alpha E_{1-\alpha}(-a z)$$

01.03.21.0093.01

$$\int z^n e^{b+a z}\, dz = a^{-n-1} (-1)^n e^b\, \Gamma(n+1, -a z) /; n \in \mathbb{Z}$$

01.03.21.0094.01

$$\int z\, e^{b+a z}\, dz = \frac{e^{b+a z} (a z - 1)}{a^2}$$

01.03.21.0095.01

$$\int \frac{e^{b+a z}}{z} \, dz = e^b \operatorname{Ei}(a z)$$

01.03.21.0096.01

$$\int \frac{e^{b+a z}}{\sqrt{z}} \, dz = \frac{e^b \sqrt{\pi} \operatorname{erfi}\left(\sqrt{a} \sqrt{z}\right)}{\sqrt{a}}$$

Involving $z^{\alpha-1}$, arguments $b z^r$ and base a

01.03.21.0097.01

$$\int z^{\alpha-1} a^{b z^r} \, dz = -\frac{z^\alpha \Gamma\left(\frac{\alpha}{r}, -b z^r \log(a)\right) \left(-b z^r \log(a)\right)^{-\frac{\alpha}{r}}}{r}$$

01.03.21.0098.01

$$\int \frac{a^{b z^r}}{z} \, dz = \frac{\operatorname{Ei}(b z^r \log(a))}{r}$$

Involving $z^{\alpha-1}$and arguments $a z^r$

01.03.21.0099.01

$$\int z^{\alpha-1} e^{a z^r} \, dz = -\frac{z^\alpha \left(-a z^r\right)^{-\frac{\alpha}{r}} \Gamma\left(\frac{\alpha}{r}, -a z^r\right)}{r}$$

01.03.21.0100.01

$$\int \frac{e^{a z^r}}{z} \, dz = \frac{\operatorname{Ei}(a z^r)}{r}$$

01.03.21.0101.01

$$\int z^{2n} e^{a z^2} \, dz = -\frac{1}{2} z \left(-a z^2\right)^{-\frac{1}{2}} (-a)^{-n} \left(\operatorname{erfc}\left(\sqrt{-a z^2}\right) \Gamma\left(n+\frac{1}{2}\right) + e^{a z^2} \sum_{k=0}^{n-1} \frac{\left(-a z^2\right)^{k+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{k-n+1}} - e^{a z^2} \sum_{k=n}^{-1} \frac{\left(-a z^2\right)^{k+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{k-n+1}}\right) /; n \in \mathbb{Z}$$

01.03.21.0102.01

$$\int z^{2n-1} e^{a z^2} \, dz = -\frac{1}{2} (-a)^{-n} \left(\frac{(-1)^{n-1} \operatorname{Ei}\left(a z^2\right)}{(-n)!} + e^{a z^2} \sum_{k=0}^{n-1} \frac{\left(-a z^2\right)^k}{(n)_{k-n+1}} - e^{a z^2} \sum_{k=n}^{-1} \frac{\left(-a z^2\right)^k}{(n)_{k-n+1}}\right) /; n \in \mathbb{Z}$$

01.03.21.0103.01

$$\int z\, e^{a z^2} \, dz = \frac{e^{a z^2}}{2 a}$$

01.03.21.0104.01

$$\int z^2 e^{a z^2} \, dz = \frac{e^{a z^2} z}{2 a} - \frac{\sqrt{\pi} \operatorname{erfi}\left(\sqrt{a}\, z\right)}{4 a^{3/2}}$$

01.03.21.0105.01

$$\int z^3 e^{a z^2} \, dz = \frac{1}{2} e^{a z^2} \left(\frac{z^2}{a} - \frac{1}{a^2}\right)$$

01.03.21.0106.01

$$\int z^4 e^{a z^2} dz = \frac{2\sqrt{a}\, e^{a z^2} z\left(2 a z^2 - 3\right) + 3\sqrt{\pi}\, \operatorname{erfi}\left(\sqrt{a}\, z\right)}{8 a^{5/2}}$$

01.03.21.0107.01

$$\int z^5 e^{a z^2} dz = \frac{e^{a z^2}\left(a^2 z^4 - 2 a z^2 + 2\right)}{2 a^3}$$

01.03.21.0108.01

$$\int \frac{e^{a z^2}}{z} dz = \frac{1}{2} \operatorname{Ei}\left(a z^2\right)$$

01.03.21.0109.01

$$\int \frac{e^{a z^2}}{z^2} dz = \sqrt{a}\, \sqrt{\pi}\, \operatorname{erfi}\left(\sqrt{a}\, z\right) - \frac{e^{a z^2}}{z}$$

01.03.21.0110.01

$$\int \frac{e^{a z^2}}{z^3} dz = \frac{1}{2} a \operatorname{Ei}\left(a z^2\right) - \frac{e^{a z^2}}{2 z^2}$$

01.03.21.0111.01

$$\int \frac{e^{a z^2}}{z^4} dz = \frac{2 a^{3/2} \sqrt{\pi}\, z^3 \operatorname{erfi}\left(\sqrt{a}\, z\right) - e^{a z^2}\left(2 a z^2 + 1\right)}{3 z^3}$$

01.03.21.0112.01

$$\int \frac{e^{a z^2}}{z^5} dz = \frac{a^2 z^4 \operatorname{Ei}\left(a z^2\right) - e^{a z^2}\left(a z^2 + 1\right)}{4 z^4}$$

01.03.21.0113.01

$$\int z^n e^{a\sqrt{z}} dz = -2 a^{-2(n+1)} \left(\frac{(-1)^{2n+1} \operatorname{Ei}\left(a\sqrt{z}\right)}{(-2n-2)!} + e^{a\sqrt{z}} \sum_{k=0}^{2n+1} \frac{\left(-a\sqrt{z}\right)^k}{(2n+2)_{k-2n-1}} - e^{a\sqrt{z}} \sum_{k=2n+2}^{-1} \frac{\left(-a\sqrt{z}\right)^k}{(2n+2)_{k-2n-1}} \right) /;\ n \in \mathbb{Z}$$

01.03.21.0114.01

$$\int z\, e^{a\sqrt{z}} dz = \frac{2 e^{a\sqrt{z}}\left(a^3 z^{3/2} - 3 a^2 z + 6 a\sqrt{z} - 6\right)}{a^4}$$

01.03.21.0115.01

$$\int z^2 e^{a\sqrt{z}} dz = \frac{2 e^{a\sqrt{z}}\left(20 a^3 z^{3/2} + a^5 z^{5/2} - 5 a^4 z^2 - 60 a^2 z + 120 a\sqrt{z} - 120\right)}{a^6}$$

01.03.21.0116.01

$$\int z^3 e^{a\sqrt{z}} dz = \frac{1}{a^8}\left(2 e^{a\sqrt{z}}\left(840 a^3 z^{3/2} + 42 a^5 z^{5/2} + a^7 z^{7/2} - 7 a^6 z^3 - 210 a^4 z^2 - 2520 a^2 z + 5040 a\sqrt{z} - 5040\right)\right)$$

01.03.21.0117.01

$$\int z^4 e^{a\sqrt{z}} dz = \frac{1}{a^{10}}\left(2 e^{a\sqrt{z}}\left(60\,480 a^3 z^{3/2} + 3024 a^5 z^{5/2} + 72 a^7 z^{7/2} + a^9 z^{9/2} - 9 a^8 z^4 - 504 a^6 z^3 - 15\,120 a^4 z^2 - 181\,440 a^2 z + 362\,880 a\sqrt{z} - 362\,880\right)\right)$$

01.03.21.0118.01

$$\int z^5 e^{a\sqrt{z}}\, dz = \frac{1}{a^{12}}\left(2 e^{a\sqrt{z}}\left(6652800\, a^3 z^{3/2} + 332640\, a^5 z^{5/2} + 7920\, a^7 z^{7/2} + 110\, a^9 z^{9/2} + a^{11} z^{11/2} - 11\, a^{10} z^5 - 990\, a^8 z^4 - 55440\, a^6 z^3 - 1663200\, a^4 z^2 - 19958400\, a^2 z + 39916800\, a\sqrt{z} - 39916800\right)\right)$$

01.03.21.0119.01

$$\int \frac{e^{a\sqrt{z}}}{z}\, dz = 2\,\text{Ei}\left(a\sqrt{z}\right)$$

01.03.21.0120.01

$$\int \frac{e^{a\sqrt{z}}}{z^2}\, dz = \frac{a^2 z\,\text{Ei}\left(a\sqrt{z}\right) - e^{a\sqrt{z}}\left(\sqrt{z}\, a + 1\right)}{z}$$

01.03.21.0121.01

$$\int \frac{e^{a\sqrt{z}}}{z^3}\, dz = \frac{a^4 z^2\,\text{Ei}\left(a\sqrt{z}\right) - e^{a\sqrt{z}}\left(a^3 z^{3/2} + a^2 z + 2\, a\sqrt{z} + 6\right)}{12\, z^2}$$

01.03.21.0122.01

$$\int \frac{e^{a\sqrt{z}}}{z^4}\, dz = \frac{a^6 z^3\,\text{Ei}\left(a\sqrt{z}\right) - e^{a\sqrt{z}}\left(2\, a^3 z^{3/2} + a^5 z^{5/2} + a^4 z^2 + 6\, a^2 z + 24\, a\sqrt{z} + 120\right)}{360\, z^3}$$

01.03.21.0123.01

$$\int \frac{e^{a\sqrt{z}}}{z^5}\, dz = \frac{1}{20160\, z^4}\left(a^8 z^4\,\text{Ei}\left(a\sqrt{z}\right) - e^{a\sqrt{z}}\left(24\, a^3 z^{3/2} + 2\, a^5 z^{5/2} + a^7 z^{7/2} + a^6 z^3 + 6\, a^4 z^2 + 120\, a^2 z + 720\, a\sqrt{z} + 5040\right)\right)$$

Involving $z^{\alpha-1}$, arguments $b\, z^r + d$ and base a

01.03.21.0124.01

$$\int z^{\alpha-1} a^{b z^r + d}\, dz = -\frac{a^d z^\alpha\, \Gamma\left(\frac{\alpha}{r}, -b\, z^r \log(a)\right)\left(-b\, z^r \log(a)\right)^{-\frac{\alpha}{r}}}{r}$$

01.03.21.0125.01

$$\int \frac{a^{b z^r + d}}{z}\, dz = \frac{a^d\,\text{Ei}(b\, z^r \log(a))}{r}$$

Involving $z^{\alpha-1}$and arguments $a\, z^r + b$

01.03.21.0126.01

$$\int z^{\alpha-1} e^{a z^r + b}\, dz = -\frac{e^b z^\alpha \left(-a\, z^r\right)^{-\frac{\alpha}{r}}\, \Gamma\left(\frac{\alpha}{r}, -a\, z^r\right)}{r}$$

01.03.21.0127.01

$$\int \frac{e^{a z^r+b}}{z}\,dz = \frac{e^b \operatorname{Ei}(a z^r)}{r}$$

Involving rational functions

Involving $(a z + b)^{-n}$

01.03.21.0128.01

$$\int \frac{e^{c z}}{a z+b}\,dz = \frac{1}{a} e^{-\frac{b c}{a}} \operatorname{Ei}\left(c\left(\frac{b}{a}+z\right)\right)$$

01.03.21.0129.01

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

01.03.21.0130.01

$$\int \frac{e^{c z}}{(b+a z)^3}\,dz = \frac{1}{2 a^3 (b+a z)^2} e^{-\frac{b c}{a}}\left(c^2 (b+a z)^2 \operatorname{Ei}\left(c\left(\frac{b}{a}+z\right)\right)-a\, e^{c\left(\frac{b}{a}+z\right)} (c z a+a+b c)\right)$$

01.03.21.0131.01

$$\int \frac{e^{c z}}{(b+a z)^4}\,dz = \frac{1}{6 a^4}\left(c^3 e^{-\frac{b c}{a}} \operatorname{Ei}\left(c\left(\frac{b}{a}+z\right)\right)-\frac{a\, e^{c z}\left(\left(c^2 z^2+c z+2\right) a^2+b c (2 c z+1) a+b^2 c^2\right)}{(b+a z)^3}\right)$$

01.03.21.0132.01

$$\int \frac{e^{c z}}{(b+a z)^5}\,dz = \frac{1}{24 a^5}\left(c^4 e^{-\frac{b c}{a}} \operatorname{Ei}\left(c\left(\frac{b}{a}+z\right)\right)-\frac{a\, e^{c z}\left(6 a^3+2 c (b+a z) a^2+c^2 (b+a z)^2 a+c^3 (b+a z)^3\right)}{(b+a z)^4}\right)$$

01.03.21.0133.01

$$\int \frac{e^{c z}}{(b+a z)^6}\,dz = \frac{1}{120 a^6}\left(c^5 e^{-\frac{b c}{a}} \operatorname{Ei}\left(c\left(\frac{b}{a}+z\right)\right)-\frac{a\, e^{c z}\left(24 a^4+6 c (b+a z) a^3+2 c^2 (b+a z)^2 a^2+c^3 (b+a z)^3 a+c^4 (b+a z)^4\right)}{(b+a z)^5}\right)$$

01.03.21.0134.01

$$\int \frac{z\, e^{c z}}{b+a z}\,dz = \frac{\frac{a\, e^{c z}}{c}-b\, e^{-\frac{b c}{a}} \operatorname{Ei}\left(c\left(\frac{b}{a}+z\right)\right)}{a^2}$$

01.03.21.0135.01

$$\int \frac{z^2 e^{c z}}{b+a z}\,dz = \frac{b^2 e^{-\frac{b c}{a}} \operatorname{Ei}\left(c\left(\frac{b}{a}+z\right)\right)-\frac{a\, e^{c z} (-c z a+a+b c)}{c^2}}{a^3}$$

01.03.21.0136.01

$$\int \frac{z\, e^{c z}}{(b+a z)^2}\,dz = \frac{e^{-\frac{b c}{a}}\left(a\, e^{c\left(\frac{b}{a}+z\right)} b+(a-b c)(b+a z) \operatorname{Ei}\left(c\left(\frac{b}{a}+z\right)\right)\right)}{a^3 (b+a z)}$$

01.03.21.0137.01

$$\int \frac{z^2 e^{cz}}{(b+az)^2}\,dz = \frac{e^{-\frac{bc}{a}}\left(a\,e^{c\left(\frac{b}{a}+z\right)}\left(z\,a^2+b\,a-b^2\,c\right)+b\,c\,(b\,c-2\,a)\,(b+a\,z)\,\mathrm{Ei}\left(c\left(\frac{b}{a}+z\right)\right)\right)}{a^4\,c\,(b+a\,z)}$$

01.03.21.0138.01

$$\int \frac{z^3 e^{cz}}{(b+az)^2}\,dz = \frac{(3\,a-b\,c)\,e^{-\frac{bc}{a}}\,\mathrm{Ei}\left(c\left(\frac{b}{a}+z\right)\right)b^2+\frac{a\,e^{cz}\left(z\,(c\,z-1)\,a^3-(c\,z\,b+b)\,a^2-2\,b^2\,c\,a+b^3\,c^2\right)}{c^2\,(b+a\,z)}}{a^5}$$

01.03.21.0139.01

$$\int \frac{z^4 e^{cz}}{(b+az)^2}\,dz = \frac{1}{a^6}\left((b\,c-4\,a)\,e^{-\frac{bc}{a}}\,\mathrm{Ei}\left(c\left(\frac{b}{a}+z\right)\right)b^3+\frac{a\,e^{cz}\left(z\left(c^2\,z^2-2\,c\,z+2\right)a^4+b\left(2-c^2\,z^2\right)a^3+b^2\,c\,(c\,z+2)\,a^2+3\,b^3\,c^2\,a-b^4\,c^3\right)}{c^3\,(b+a\,z)}\right)$$

Involving $\left(a\,z^2+b\right)^{-n}$

01.03.21.0140.01

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

01.03.21.0141.01

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

01.03.21.0142.01

$$\int \frac{e^{cz}}{\left(a\,z^2+b\right)^2}\,dz = \frac{1}{4\,a\,b^{3/2}\left(a\,z^2+b\right)}\left(e^{-\frac{i\sqrt{b}\,c}{\sqrt{a}}}\left(2\,a\sqrt{b}\,e^{c\left(\frac{i\sqrt{b}}{\sqrt{a}}+z\right)}z+\left(\sqrt{a}+i\sqrt{b}\,c\right)i\left(a\,z^2+b\right)\mathrm{Ei}\left(c\left(\frac{i\sqrt{b}}{\sqrt{a}}+z\right)\right)-i\left(\sqrt{a}-i\sqrt{b}\,c\right)e^{\frac{2i\sqrt{b}\,c}{\sqrt{a}}}\left(a\,z^2+b\right)\mathrm{Ei}\left(c\left(-\frac{i\sqrt{b}}{\sqrt{a}}+z\right)\right)\right)\right)$$

01.03.21.0143.01

$$\int \frac{z\,e^{cz}}{\left(a\,z^2+b\right)^2}\,dz = \frac{1}{4\,a^{3/2}}\left(\frac{c}{\sqrt{b}}\,e^{-\frac{i\sqrt{b}\,c}{\sqrt{a}}}\,i\,\mathrm{Ei}\left(c\left(\frac{i\sqrt{b}}{\sqrt{a}}+z\right)\right)-\frac{i\,c}{\sqrt{b}}\,e^{\frac{i\sqrt{b}\,c}{\sqrt{a}}}\,\mathrm{Ei}\left(c\left(-\frac{i\sqrt{b}}{\sqrt{a}}+z\right)\right)-\frac{2\sqrt{a}\,e^{cz}}{a\,z^2+b}\right)$$

Involving $\left(a\,z^2+b\,z+c\right)^{-n}$

01.03.21.0144.01

$$\int \frac{e^{d z}}{a z^2 + b z + c} \, dz = \frac{1}{\sqrt{b^2 - 4 a c}} e^{-\frac{\left(b + \sqrt{b^2 - 4 a c}\right) d}{2 a}} \left(e^{\frac{\sqrt{b^2 - 4 a c} \, d}{a}} \operatorname{Ei}\left(\frac{d \left(b + 2 a z - \sqrt{b^2 - 4 a c}\right)}{2 a} \right) - \operatorname{Ei}\left(\frac{d \left(b + 2 a z + \sqrt{b^2 - 4 a c}\right)}{2 a} \right) \right)$$

01.03.21.0145.01

$$\int \frac{z e^{d z}}{a z^2 + b z + c} \, dz = \frac{1}{2 a \sqrt{b^2 - 4 a c}} e^{-\frac{\left(b + \sqrt{b^2 - 4 a c}\right) d}{2 a}} \left(\left(\sqrt{b^2 - 4 a c} - b \right) e^{\frac{\sqrt{b^2 - 4 a c} \, d}{a}} \operatorname{Ei}\left(\frac{d \left(b + 2 a z - \sqrt{b^2 - 4 a c}\right)}{2 a} \right) + \left(b + \sqrt{b^2 - 4 a c} \right) \operatorname{Ei}\left(\frac{d \left(b + 2 a z + \sqrt{b^2 - 4 a c}\right)}{2 a} \right) \right)$$

01.03.21.0146.01

$$\int \frac{e^{d z}}{\left(a z^2 + b z + c\right)^2} \, dz = \frac{1}{\left(b^2 - 4 a c\right)^{3/2} (c + z (b + a z))} e^{-\frac{\left(b + \sqrt{b^2 - 4 a c}\right) d}{2 a}} \left(-\sqrt{b^2 - 4 a c} \, e^{\frac{d \left(b + 2 a z + \sqrt{b^2 - 4 a c}\right)}{2 a}} (b + 2 a z) - \left(2 a - \sqrt{b^2 - 4 a c} \, d \right) e^{\frac{\sqrt{b^2 - 4 a c} \, d}{a}} (c + z (b + a z)) \operatorname{Ei}\left(\frac{d \left(b + 2 a z - \sqrt{b^2 - 4 a c}\right)}{2 a} \right) + \left(2 a + \sqrt{b^2 - 4 a c} \, d \right) (c + z (b + a z)) \operatorname{Ei}\left(\frac{d \left(b + 2 a z + \sqrt{b^2 - 4 a c}\right)}{2 a} \right) \right)$$

01.03.21.0147.01

$$\int \frac{z e^{d z}}{\left(a z^2 + b z + c\right)^2} \, dz = \frac{1}{2 a \left(b^2 - 4 a c\right)^{3/2}} \left(\left(b \left(b - \sqrt{b^2 - 4 a c} \right) d + 2 a (b - 2 c d) \right) e^{\frac{\left(\sqrt{b^2 - 4 a c} - b\right) d}{2 a}} \operatorname{Ei}\left(\frac{d \left(b + 2 a z - \sqrt{b^2 - 4 a c}\right)}{2 a} \right) + \frac{1}{c + z (b + a z)} \left(e^{-\frac{\left(b + \sqrt{b^2 - 4 a c}\right) d}{2 a}} \left(2 a \sqrt{b^2 - 4 a c} \, e^{\frac{d \left(b + 2 a z + \sqrt{b^2 - 4 a c}\right)}{2 a}} (2 c + b z) - \left(b \left(b + \sqrt{b^2 - 4 a c} \right) d + 2 a (b - 2 c d) \right) (c + z (b + a z)) \operatorname{Ei}\left(\frac{d \left(b + 2 a z + \sqrt{b^2 - 4 a c}\right)}{2 a} \right) \right) \right) \right)$$

Involving algebraic functions

Involving $(a z + b)^\beta$

01.03.21.0148.01

$$\int (b + a z)^\beta e^{d + c z} \, dz = -\frac{e^{d - \frac{b c}{a}} (b + a z)^{\beta+1}}{a} E_{-\beta}\left(-\frac{c (b + a z)}{a}\right)$$

01.03.21.0149.01

$$\int (b + a z)^\beta e^{c z} \, dz = -\frac{e^{-\frac{b c}{a}} (b + a z)^{\beta+1}}{a} E_{-\beta}\left(-\frac{c (b + a z)}{a}\right)$$

01.03.21.0150.01

$$\int (b + a z)^{3/2} e^{c z} \, dz = \frac{1}{a^2 \left(-\frac{c (b+a z)}{a}\right)^{7/2}} \left(c e^{-\frac{b c}{a}} (b + a z)^{7/2} \left(e^{c\left(\frac{b}{a}+z\right)} \left(-\frac{c (b + a z)}{a}\right)^{3/2} + \frac{3}{4}\left(-\sqrt{\pi} \operatorname{erf}\left(\sqrt{-\frac{c (b + a z)}{a}}\right) + 2 \sqrt{-\frac{c (b + a z)}{a}} \, e^{c\left(\frac{b}{a}+z\right)} + \sqrt{\pi}\right)\right)\right)$$

01.03.21.0151.01

$$\int \sqrt{b + a z} \, e^{c z} \, dz = \frac{c}{a^2 \left(-\frac{c (b+a z)}{a}\right)^{5/2}} e^{-\frac{b c}{a}} (b + a z)^{5/2} \left(e^{c\left(\frac{b}{a}+z\right)} \sqrt{-\frac{c (b + a z)}{a}} - \frac{1}{2} \sqrt{\pi} \left(\operatorname{erf}\left(\sqrt{-\frac{c (b + a z)}{a}}\right) - 1\right)\right)$$

01.03.21.0152.01

$$\int \frac{e^{c z}}{\sqrt{b + a z}} \, dz = \frac{e^{-\frac{b c}{a}} \sqrt{\pi} \sqrt{b + a z} \left(\operatorname{erf}\left(\sqrt{-\frac{c (b+a z)}{a}}\right) - 1\right)}{a \sqrt{-\frac{c (b+a z)}{a}}}$$

01.03.21.0153.01

$$\int \frac{e^{c z}}{(b + a z)^{3/2}} \, dz = -\frac{2}{a \sqrt{b + a z}} e^{-\frac{b c}{a}} \left(\sqrt{-\frac{c (b + a z)}{a}} \sqrt{\pi} \operatorname{erf}\left(\sqrt{-\frac{c (b + a z)}{a}}\right) + e^{c\left(\frac{b}{a}+z\right)} - \sqrt{\pi} \sqrt{-\frac{c (b + a z)}{a}}\right)$$

Arguments involving polynomials

Involving $a z^2 + b z + c$

01.03.21.0154.01

$$\int d^{a z^2 + b z + c} \, dz = \frac{\sqrt{\pi}}{2 \sqrt{a} \log^{\frac{1}{2}}(d)} d^{c - \frac{b^2}{4 a}} \operatorname{erfi}\left(\frac{(b + 2 a z) \log^{\frac{1}{2}}(d)}{2 \sqrt{a}}\right)$$

01.03.21.0155.01

$$\int e^{a z^2+b z+c}\, dz == \frac{\sqrt{\pi}}{2\sqrt{a}}\, e^{c-\frac{b^2}{4a}}\, \mathrm{erfi}\left(\frac{b+2 a z}{2\sqrt{a}}\right)$$

Involving $a z^2 + b z$

01.03.21.0156.01

$$\int d^{a z^2+b z}\, dz == \frac{\sqrt{\pi}}{2\sqrt{a}\, \log^{\frac{1}{2}}(d)}\, d^{-\frac{b^2}{4a}}\, \mathrm{erfi}\left(\frac{(b+2 a z)\log^{\frac{1}{2}}(d)}{2\sqrt{a}}\right)$$

01.03.21.0157.01

$$\int e^{a z^2+b z}\, dz == \frac{\sqrt{\pi}}{2\sqrt{a}}\, e^{-\frac{b^2}{4a}}\, \mathrm{erfi}\left(\frac{b+2 a z}{2\sqrt{a}}\right)$$

Involving $a z^2 + c$

01.03.21.0158.01

$$\int d^{a z^2+c}\, dz == \frac{d^c \sqrt{\pi}\, \mathrm{erfi}\left(\sqrt{a}\, z \log^{\frac{1}{2}}(d)\right)}{2\sqrt{a}\, \log^{\frac{1}{2}}(d)}$$

01.03.21.0159.01

$$\int e^{a z^2+c}\, dz == \frac{e^c \sqrt{\pi}\, \mathrm{erfi}\left(\sqrt{a}\, z\right)}{2\sqrt{a}}$$

Arguments involving rational functions

Involving $a z^2 + \frac{b}{z^2}$

01.03.21.0160.01

$$\int d^{a z^2+\frac{b}{z^2}}\, dz == \frac{1}{4\sqrt{-a\log(d)}}\, e^{-2\sqrt{-a\log(d)}\sqrt{-b\log(d)}}\sqrt{\pi}$$
$$\left(\mathrm{erfc}\left(\frac{\sqrt{-b\log(d)}}{z} - z\sqrt{-a\log(d)}\right) - e^{4\sqrt{-a\log(d)}\sqrt{-b\log(d)}}\, \mathrm{erfc}\left(\sqrt{-a\log(d)}\, z + \frac{\sqrt{-b\log(d)}}{z}\right)\right)$$

01.03.21.0161.01

$$\int e^{a z^2+\frac{b}{z^2}}\, dz == \frac{e^{-2\sqrt{-a}\sqrt{-b}}\sqrt{\pi}}{4\sqrt{-a}}\left(\mathrm{erfc}\left(\frac{\sqrt{-b}}{z} - \sqrt{-a}\, z\right) - e^{4\sqrt{-a}\sqrt{-b}}\, \mathrm{erfc}\left(\sqrt{-a}\, z + \frac{\sqrt{-b}}{z}\right)\right)$$

Involving $a z^2 + \frac{b}{z^2} + c$

01.03.21.0162.01

$$\int d^{a z^2+\frac{b}{z^2}+c}\, dz = \frac{1}{4\sqrt{-a\log(d)}}\left(d^c\, e^{-2\sqrt{-a\log(d)}\sqrt{-b\log(d)}}\sqrt{\pi}\left(\operatorname{erfc}\left(\frac{\sqrt{-b\log(d)}}{z} - z\sqrt{-a\log(d)}\right) - e^{4\sqrt{-a\log(d)}\sqrt{-b\log(d)}}\operatorname{erfc}\left(\sqrt{-a\log(d)}\, z + \frac{\sqrt{-b\log(d)}}{z}\right)\right)\right)$$

01.03.21.0163.01

$$\int e^{a z^2+\frac{b}{z^2}+c}\, dz = \frac{e^{c-2\sqrt{-a}\sqrt{-b}}\sqrt{\pi}}{4\sqrt{-a}}\left(\operatorname{erfc}\left(\frac{\sqrt{-b}}{z} - \sqrt{-a}\, z\right) - e^{4\sqrt{-a}\sqrt{-b}}\operatorname{erfc}\left(\sqrt{-a}\, z + \frac{\sqrt{-b}}{z}\right)\right)$$

Arguments involving algebraic functions

Involving $a z + b\sqrt{z} + c$

01.03.21.0164.01

$$\int d^{\sqrt{z}\, b+a z+c}\, dz = \frac{d^{\sqrt{z}\, b+a z+c}}{a\log(d)} - \frac{b\sqrt{\pi}}{2 a^{3/2}\log^{\frac{1}{2}}(d)}\, d^{c-\frac{b^2}{4a}}\operatorname{erfi}\left(\frac{\left(2\sqrt{z}\, a+b\right)\log^{\frac{1}{2}}(d)}{2\sqrt{a}}\right)$$

01.03.21.0165.01

$$\int e^{a z+\sqrt{z}\, b+c}\, dz = \frac{e^{\sqrt{z}\, b+c+a z}}{a} - \frac{b\, e^{c-\frac{b^2}{4a}}\sqrt{\pi}\operatorname{erfi}\left(\frac{2\sqrt{z}\, a+b}{2\sqrt{a}}\right)}{2 a^{3/2}}$$

Involving $a z + b\sqrt{z}$

01.03.21.0166.01

$$\int d^{\sqrt{z}\, b+a z}\, dz = \frac{d^{\sqrt{z}\, b+a z}}{a\log(d)} - \frac{b\sqrt{\pi}}{2 a^{3/2}\log^{\frac{1}{2}}(d)}\, d^{-\frac{b^2}{4a}}\operatorname{erfi}\left(\frac{\left(2\sqrt{z}\, a+b\right)\log^{\frac{1}{2}}(d)}{2\sqrt{a}}\right)$$

01.03.21.0167.01

$$\int e^{a z+\sqrt{z}\, b}\, dz = \frac{e^{\sqrt{z}\, b+a z}}{a} - \frac{b\, e^{-\frac{b^2}{4a}}\sqrt{\pi}\operatorname{erfi}\left(\frac{2\sqrt{z}\, a+b}{2\sqrt{a}}\right)}{2 a^{3/2}}$$

Involving $a z^r + c$

01.03.21.0168.01

$$\int d^{a z^r+c}\, dz = -\frac{d^c\, z\, \Gamma\left(\frac{1}{r}, -a z^r\log(d)\right)\left(-a z^r\log(d)\right)^{-1/r}}{r}$$

01.03.21.0169.01

$$\int e^{a z^r+c}\, dz = -\frac{e^c\, z\left(-a z^r\right)^{-1/r}\Gamma\left(\frac{1}{r}, -a z^r\right)}{r}$$

01.03.21.0170.01

$$\int e^{a z^2+c}\, dz = \frac{e^c \sqrt{\pi}\, \operatorname{erfi}\left(\sqrt{a}\, z\right)}{2 \sqrt{a}}$$

01.03.21.0171.01

$$\int e^{\sqrt{z}\, a+c}\, dz = 2\, e^{a \sqrt{z}} \left(\frac{e^c \sqrt{z}}{a} - \frac{e^c}{a^2}\right)$$

Arguments involving exponential functions

01.03.21.0172.01

$$\int a^{b^z}\, dz = \frac{\operatorname{Ei}(b^z \log(a))}{\log(b)}$$

01.03.21.0173.01

$$\int e^{a^z}\, dz = \frac{\operatorname{Ei}(a^z)}{\log(a)}$$

01.03.21.0174.01

$$\int e^{e^z}\, dz = \operatorname{Ei}(e^z)$$

Arguments involving trigonometric functions

Involving tan

01.03.21.0175.01

$$\int e^{\tan(z)}\, dz = \frac{1}{2}\, i\, e^{-i} \operatorname{Ei}(i + \tan(z)) - \frac{1}{2}\, i\, e^{i} \operatorname{Ei}(-i + \tan(z))$$

01.03.21.0176.01

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

Involving cot

01.03.21.0177.01

$$\int e^{\cot(z)}\, dz = \frac{1}{2}\, i\, e^{i} \operatorname{Ei}(-i + \cot(z)) - \frac{1}{2}\, i\, e^{-i} \operatorname{Ei}(i + \cot(z))$$

01.03.21.0178.01

$$\int e^{a \cot(z)}\, dz = \frac{1}{2}\, i\, e^{i a} \operatorname{Ei}(-i\, a + a \cot(z)) - \frac{1}{2}\, i\, e^{-i a} \operatorname{Ei}(i\, a + a \cot(z))$$

Arguments involving hyperbolic functions

Involving tanh

01.03.21.0179.01

$$\int e^{\tanh(z)}\,dz = \frac{\operatorname{Ei}(\tanh(z)+1)}{2\,e} - \frac{1}{2}\,e\,\operatorname{Ei}(\tanh(z)-1)$$

01.03.21.0180.01

$$\int e^{a\tanh(z)}\,dz = \frac{1}{2}\,e^{-a}\,\operatorname{Ei}(\tanh(z)\,a+a) - \frac{1}{2}\,e^{a}\,\operatorname{Ei}(a\tanh(z)-a)$$

Involving coth

01.03.21.0181.01

$$\int e^{\coth(z)}\,dz = \frac{\operatorname{Ei}(\coth(z)+1)}{2\,e} - \frac{1}{2}\,e\,\operatorname{Ei}(\coth(z)-1)$$

01.03.21.0182.01

$$\int e^{a\coth(z)}\,dz = \frac{1}{2}\,e^{-a}\,\operatorname{Ei}(\coth(z)\,a+a) - \frac{1}{2}\,e^{a}\,\operatorname{Ei}(a\coth(z)-a)$$

Arguments involving inverse trigonometric functions

Involving $\sin^{-1}$

01.03.21.0183.01

$$\int e^{\sin^{-1}(z)}\,dz = \frac{1}{2}\,e^{\sin^{-1}(z)}\,z + \frac{1}{2}\,e^{\sin^{-1}(z)}\,\sqrt{1-z^2}$$

01.03.21.0184.01

$$\int e^{a\sin^{-1}(z)}\,dz = \frac{e^{a\sin^{-1}(z)}\left(\sqrt{1-z^2}\;a+z\right)}{a^2+1}$$

Involving $\cos^{-1}$

01.03.21.0185.01

$$\int e^{\cos^{-1}(z)}\,dz = \frac{1}{2}\,e^{\cos^{-1}(z)}\left(z-\sqrt{1-z^2}\right)$$

01.03.21.0186.01

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

Involving $\tan^{-1}$

01.03.21.0187.01

$$\int e^{\tan^{-1}(z)}\,dz = e^{\tan^{-1}(z)}\,z - i\,e^{\tan^{-1}(z)}\,{}_2F_1\!\left(-\frac{i}{2},1;1-\frac{i}{2};-e^{2\,i\tan^{-1}(z)}\right) + \left(\frac{2}{5}+\frac{i}{5}\right)e^{(1+2\,i)\tan^{-1}(z)}\,{}_2F_1\!\left(1-\frac{i}{2},1;2-\frac{i}{2};-e^{2\,i\tan^{-1}(z)}\right)$$

01.03.21.0188.01

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

Involving $\cot^{-1}$

01.03.21.0189.01

$$\int e^{\cot^{-1}(z)}\, dz = e^{\cot^{-1}(z)}\, z + e^{\cot^{-1}(z)}\, i\, {}_2F_1\left(-\frac{i}{2}, 1; 1-\frac{i}{2}; e^{2 i \cot^{-1}(z)}\right) + \left(\frac{2}{5}+\frac{i}{5}\right) e^{(1+2i)\cot^{-1}(z)}\, {}_2F_1\left(1-\frac{i}{2}, 1; 2-\frac{i}{2}; e^{2 i \cot^{-1}(z)}\right)$$

01.03.21.0190.01

$$\int e^{a \cot^{-1}(z)}\, dz = \frac{e^{a \cot^{-1}(z)}}{a+2i}\left((a+2i)\left(z + i\, {}_2F_1\left(-\frac{1}{2}(i a), 1; 1-\frac{i a}{2}; e^{2 i \cot^{-1}(z)}\right)\right) + a\, e^{2 i \cot^{-1}(z)}\, i\, {}_2F_1\left(1-\frac{i a}{2}, 1; 2-\frac{i a}{2}; e^{2 i \cot^{-1}(z)}\right)\right)$$

Involving $\csc^{-1}$

01.03.21.0191.01

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

01.03.21.0192.01

$$\int e^{a \csc^{-1}(z)}\, dz = \frac{e^{a \csc^{-1}(z)}}{a+i}\left((a+i)\, z + 2 a\, e^{i \csc^{-1}(z)}\, i\, {}_2F_1\left(\frac{1}{2}-\frac{i a}{2}, 1; \frac{3}{2}-\frac{i a}{2}; e^{2 i \csc^{-1}(z)}\right)\right)$$

Involving $\sec^{-1}$

01.03.21.0193.01

$$\int e^{\sec^{-1}(z)}\, dz = e^{\sec^{-1}(z)}\left(z - (1-i)\, e^{i \sec^{-1}(z)}\, {}_2F_1\left(\frac{1}{2}-\frac{i}{2}, 1; \frac{3}{2}-\frac{i}{2}; -e^{2 i \sec^{-1}(z)}\right)\right)$$

01.03.21.0194.01

$$\int e^{a \sec^{-1}(z)}\, dz = \frac{e^{a \sec^{-1}(z)}}{a+i}\left((a+i)\, z - 2 a\, e^{i \sec^{-1}(z)}\, {}_2F_1\left(\frac{1}{2}-\frac{i a}{2}, 1; \frac{3}{2}-\frac{i a}{2}; -e^{2 i \sec^{-1}(z)}\right)\right)$$

Arguments involving inverse hyperbolic functions

Involving $\sinh^{-1}$

01.03.21.0195.01

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

01.03.21.0196.01

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

Involving $\cosh^{-1}$

01.03.21.0197.01

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

01.03.21.0198.01

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

Involving $\tanh^{-1}$

01.03.21.0199.01

$$\int e^{\tanh^{-1}(z)}\,dz = \sin^{-1}(z) - \sqrt{1-z^2}$$

01.03.21.0200.01

$$\int e^{a\tanh^{-1}(z)}\,dz = \frac{e^{a\tanh^{-1}(z)}}{a+2}\left((a+2)\left(z + {}_2F_1\left(\frac{a}{2}, 1; \frac{a}{2}+1; -e^{2\tanh^{-1}(z)}\right)\right) - a\,e^{2\tanh^{-1}(z)}\,{}_2F_1\left(\frac{a}{2}+1, 1; \frac{a}{2}+2; -e^{2\tanh^{-1}(z)}\right)\right)$$

Involving $\coth^{-1}$

01.03.21.0201.01

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

01.03.21.0202.01

$$\int e^{a\coth^{-1}(z)}\,dz = \frac{e^{a\coth^{-1}(z)}}{a+2}\left((a+2)\left(z + {}_2F_1\left(\frac{a}{2}, 1; \frac{a}{2}+1; e^{2\coth^{-1}(z)}\right)\right) + a\,e^{2\coth^{-1}(z)}\,{}_2F_1\left(\frac{a}{2}+1, 1; \frac{a}{2}+2; e^{2\coth^{-1}(z)}\right)\right)$$

Involving csch^{-1}

01.03.21.0203.01

$$\int e^{\operatorname{csch}^{-1}(z)}\,dz = \sqrt{1+\frac{1}{z^2}}\,z - \operatorname{csch}^{-1}(z) + \log(z)$$

01.03.21.0204.01

$$\int e^{a\operatorname{csch}^{-1}(z)}\,dz = \frac{e^{a\operatorname{csch}^{-1}(z)}}{a+1}\left(a\,z + z + 2\,a\,e^{\operatorname{csch}^{-1}(z)}\,{}_2F_1\left(\frac{a+1}{2}, 1; \frac{a+3}{2}; e^{2\operatorname{csch}^{-1}(z)}\right)\right)$$

Involving sech^{-1}

01.03.21.0205.01

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

01.03.21.0206.01

$$\int e^{a\,\mathrm{sech}^{-1}(z)}\,dz = \frac{e^{a\,\mathrm{sech}^{-1}(z)}}{a+1}\left(a\,z+z-2\,a\,e^{\mathrm{sech}^{-1}(z)}\,{}_2F_1\!\left(\frac{a+1}{2},1;\frac{a+3}{2};-e^{2\,\mathrm{sech}^{-1}(z)}\right)\right)$$

Arguments involving polynomials or algebraic functions and power factors

Involving power

Involving $z^n\, d^{a z^2+b z}$

01.03.21.0207.01

$$\int z^n\, d^{a z^2+b z}\,dz = -\frac{1}{2\sqrt{a\log(d)}}\left(d^{-\frac{b^2}{4a}}\sum_{q=0}^{n}2^{q-n}\binom{n}{q}\Gamma\!\left(\frac{q+1}{2},-\frac{(b+2\,a\,z)^2\log(d)}{4\,a}\right)\right.$$
$$\left.(a\log(d))^{-n-\frac{1}{2}}\,(-b\log(d))^{n-q}\,((b+2\,a\,z)\log(d))^{q+1}\left(-\frac{(b+2\,a\,z)^2\log(d)}{a}\right)^{\frac{1}{2}(-q-1)}\right)/;\, n\in\mathbb{N}$$

01.03.21.0208.01

$$\int z^n\, e^{a z^2+b z}\,dz = -\frac{1}{2\,a^{n+1}}\,e^{-\frac{b^2}{4a}}\sum_{j=0}^{n}\left(-\frac{b}{2}\right)^{n-j}(b+2\,a\,z)^{j+1}\left(-\frac{(b+2\,a\,z)^2}{a}\right)^{-\frac{j+1}{2}}\binom{n}{j}\Gamma\!\left(\frac{j+1}{2},-\frac{(b+2\,a\,z)^2}{4\,a}\right)/;\, n\in\mathbb{N}$$

01.03.21.0209.01

$$\int z^n\, d^{\sqrt{z}\,a+b z}\,dz = 2^{-2n-1}\,d^{-\frac{a^2}{4b}}\,(b\log(d))^{-2(n+1)}$$
$$\sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h}\,4^k\binom{k}{h}\binom{n}{k}\log(d)\,(a\log(d))^{-h-k+2n}\left(\left(a+2\,b\sqrt{z}\right)\log(d)\right)^{h+k}\left(-\frac{\left(a+2\,b\sqrt{z}\right)^2\log(d)}{b}\right)^{\frac{1}{2}(-h-k-1)}$$
$$\left(2\sqrt{-\frac{\left(a+2\,b\sqrt{z}\right)^2\log(d)}{b}}\;b\,\Gamma\!\left(\frac{1}{2}(h+k+2),-\frac{\left(a+2\,b\sqrt{z}\right)^2\log(d)}{4\,b}\right)+\right.$$
$$\left.a\left(a+2\,b\sqrt{z}\right)\Gamma\!\left(\frac{1}{2}(h+k+1),-\frac{\left(a+2\,b\sqrt{z}\right)^2\log(d)}{4\,b}\right)\log(d)\right)/;\, n\in\mathbb{N}$$

01.03.21.0210.01

$$\int z^n e^{\sqrt{z}\,a+b\,z}\,dz = 2^{-2n-1} b^{-2(n+1)} e^{-\frac{a^2}{4b}} \sum_{k=0}^{n}\sum_{h=0}^{k} (-1)^{k-h} 4^k a^{-h-k+2n} \left(a+2b\sqrt{z}\right)^{h+k} \left(-\frac{\left(a+2b\sqrt{z}\right)^2}{b}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left(a\left(a+2b\sqrt{z}\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(a+2b\sqrt{z}\right)^2}{4b}\right) + 2\sqrt{-\frac{\left(a+2b\sqrt{z}\right)^2}{b}}\, b\,\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(a+2b\sqrt{z}\right)^2}{4b}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n d^{a z^r + b z + c}$

01.03.21.0211.01

$$\int z^n d^{a z^2+b z+c}\,dz = -\frac{1}{2\sqrt{a\log(d)}} \left(d^{c-\frac{b^2}{4a}} \sum_{q=0}^{n} 2^{q-n} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(b+2az)^2\log(d)}{4a}\right) (a\log(d))^{-n-\frac{1}{2}} (-b\log(d))^{n-q} ((b+2az)\log(d))^{q+1} \left(-\frac{(b+2az)^2\log(d)}{a}\right)^{\frac{1}{2}(-q-1)}\right) /; n \in \mathbb{N}$$

01.03.21.0212.01

$$\int z^n e^{a z^2+b z+c}\,dz = -\frac{1}{2a^{n+1}} e^{c-\frac{b^2}{4a}} \sum_{j=0}^{n} \left(-\frac{b}{2}\right)^{n-j} (b+2az)^{j+1} \left(-\frac{(b+2az)^2}{a}\right)^{-\frac{j+1}{2}} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(b+2az)^2}{4a}\right) /; n \in \mathbb{N}$$

01.03.21.0213.01

$$\int z^n d^{\sqrt{z}\,a+b\,z+c}\,dz = 2^{-2n-1} d^{c-\frac{a^2}{4b}} (b\log(d))^{-2(n+1)} \sum_{k=0}^{n}\sum_{h=0}^{k} (-1)^{k-h} 4^k \binom{k}{h}\binom{n}{k} \log(d) (a\log(d))^{-h-k+2n} \left(\left(a+2b\sqrt{z}\right)\log(d)\right)^{h+k} \left(-\frac{\left(a+2b\sqrt{z}\right)^2\log(d)}{b}\right)^{\frac{1}{2}(-h-k-1)} \left(2\sqrt{-\frac{\left(a+2b\sqrt{z}\right)^2\log(d)}{b}}\, b\,\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(a+2b\sqrt{z}\right)^2\log(d)}{4b}\right) + a\left(a+2b\sqrt{z}\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(a+2b\sqrt{z}\right)^2\log(d)}{4b}\right)\log(d)\right) /; n \in \mathbb{N}$$

01.03.21.0214.01

$$\int z^n e^{\sqrt{z}\, a+b z+c}\, dz = 2^{-2n-1} b^{-2(n+1)} e^{c-\frac{a^2}{4b}} \sum_{k=0}^{n}\sum_{h=0}^{k} (-1)^{k-h} 4^k a^{-h-k+2n} \left(a+2b\sqrt{z}\right)^{h+k} \left(-\frac{\left(a+2b\sqrt{z}\right)^2}{b}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left(a\left(a+2b\sqrt{z}\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(a+2b\sqrt{z}\right)^2}{4b}\right) + 2\sqrt{-\frac{\left(a+2b\sqrt{z}\right)^2}{b}}\; b\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(a+2b\sqrt{z}\right)^2}{4b}\right)\right) /; n \in \mathbb{N}$$

Involving $z^{\alpha-1} d^{a z^r+c}$

01.03.21.0215.01

$$\int z^{\alpha-1} d^{a z^r+c}\, dz = -\frac{d^c z^\alpha \Gamma\left(\frac{\alpha}{r}, -a z^r \log(d)\right) \left(-a z^r \log(d)\right)^{-\frac{\alpha}{r}}}{r}$$

01.03.21.0216.01

$$\int z^{\alpha-1} e^{a z^r+c}\, dz = -\frac{e^c z^\alpha \left(-a z^r\right)^{-\frac{\alpha}{r}} \Gamma\left(\frac{\alpha}{r}, -a z^r\right)}{r}$$

01.03.21.0217.01

$$\int z^{\alpha-1} d^{a z^2+c}\, dz = -\frac{1}{2} d^c z^\alpha \Gamma\left(\frac{\alpha}{2}, -a z^2 \log(d)\right) \left(-a z^2 \log(d)\right)^{-\frac{\alpha}{2}}$$

01.03.21.0218.01

$$\int z^{\alpha-1} e^{a z^2+c}\, dz = -\frac{1}{2} e^c z^\alpha \left(-a z^2\right)^{-\frac{\alpha}{2}} \Gamma\left(\frac{\alpha}{2}, -a z^2\right)$$

01.03.21.0219.01

$$\int z^{\alpha-1} d^{\sqrt{z}\, a+c}\, dz = -2 d^c z^\alpha \Gamma\left(2\alpha, -a\sqrt{z}\log(d)\right) \left(-a\sqrt{z}\log(d)\right)^{-2\alpha}$$

01.03.21.0220.01

$$\int z^{\alpha-1} e^{\sqrt{z}\, a+c}\, dz = -2 e^c \left(-a\sqrt{z}\right)^{-2\alpha} z^\alpha \Gamma\left(2\alpha, -a\sqrt{z}\right)$$

Arguments involving rational functions and power factors

Involving power

Involving $z^{2n} d^{a z^2+\frac{b}{z^2}}$

01.03.21.0221.01

$$\int z^{2n} d^{a z^2+\frac{b}{z^2}} \, dz = \frac{\sqrt{\pi}}{4} \frac{\partial^n \frac{\log^{-n}(d) \left(e^{-2\sqrt{-a\log(d)}\sqrt{-b\log(d)}} \operatorname{erfc}\left(\frac{\sqrt{-b\log(d)}}{z} - \sqrt{-a\log(d)}\, z\right) - e^{2\sqrt{-a\log(d)}\sqrt{-b\log(d)}} \operatorname{erfc}\left(\sqrt{-a\log(d)}\, z + \frac{\sqrt{-b\log(d)}}{z}\right)\right)}{\sqrt{-a\log(d)}}}{\partial a^n} \;/;\; n \in \mathbb{N}$$

01.03.21.0222.01

$$\int z^{2n} e^{a z^2+\frac{b}{z^2}} \, dz = \frac{\sqrt{\pi}}{4} \frac{\partial^n \frac{e^{-2\sqrt{-a}\sqrt{-b}} \operatorname{erfc}\left(\frac{\sqrt{-b}}{z} - \sqrt{-a}\, z\right) - e^{2\sqrt{-a}\sqrt{-b}} \operatorname{erfc}\left(\sqrt{-a}\, z + \frac{\sqrt{-b}}{z}\right)}{\sqrt{-a}}}{\partial a^n} \;/;\; n \in \mathbb{N}$$

Involving $z^{2n} d^{a z^2+\frac{b}{z^2}+c}$

01.03.21.0223.01

$$\int z^{2n} d^{a z^2+\frac{b}{z^2}+c} \, dz = \frac{1}{4}\left(d^c \sqrt{\pi}\right) \frac{\partial^n \frac{\log^{-n}(d) \left(e^{-2\sqrt{-a\log(d)}\sqrt{-b\log(d)}} \operatorname{erfc}\left(\frac{\sqrt{-b\log(d)}}{z} - \sqrt{-a\log(d)}\, z\right) - e^{2\sqrt{-a\log(d)}\sqrt{-b\log(d)}} \operatorname{erfc}\left(\sqrt{-a\log(d)}\, z + \frac{\sqrt{-b\log(d)}}{z}\right)\right)}{\sqrt{-a\log(d)}}}{\partial a^n} \;/;\; n \in \mathbb{N}$$

01.03.21.0224.01

$$\int z^{2n} e^{a z^2+\frac{b}{z^2}+c} \, dz = \frac{1}{4}\left(e^c \sqrt{\pi}\right) \frac{\partial^n \frac{e^{-2\sqrt{-a}\sqrt{-b}} \operatorname{erfc}\left(\frac{\sqrt{-b}}{z} - \sqrt{-a}\, z\right) - e^{2\sqrt{-a}\sqrt{-b}} \operatorname{erfc}\left(\sqrt{-a}\, z + \frac{\sqrt{-b}}{z}\right)}{\sqrt{-a}}}{\partial a^n} \;/;\; n \in \mathbb{N}$$

Involving functions of the direct function

Involving powers of the direct function

Involving powers of exp

With arguments $c z$ and base a

01.03.21.0225.01

$$\int \left(a^{c z}\right)^{\nu} dz = \frac{\left(a^{c z}\right)^{\nu}}{c\, \nu \log(a)}$$

01.03.21.0226.01

$$\int \left(a^{z}\right)^{\nu} dz = \frac{\left(a^{z}\right)^{\nu}}{\nu \log(a)}$$

With arguments $c z$

01.03.21.0227.01

$$\int (e^{c z})^{\nu} \, dz = \frac{(e^{c z})^{\nu}}{c \, \nu}$$

01.03.21.0228.01

$$\int (e^{z})^{\nu} \, dz = \frac{(e^{z})^{\nu}}{\nu}$$

01.03.21.0229.01

$$\int \sqrt{e^{c z}} \, dz = \frac{2 \sqrt{e^{c z}}}{c}$$

01.03.21.0230.01

$$\int (e^{c z})^{3/2} \, dz = \frac{2 (e^{c z})^{3/2}}{3 c}$$

01.03.21.0231.01

$$\int (e^{c z})^{5/2} \, dz = \frac{2 (e^{c z})^{5/2}}{5 c}$$

01.03.21.0232.01

$$\int \frac{1}{\sqrt{e^{c z}}} \, dz = -\frac{2}{c \sqrt{e^{c z}}}$$

01.03.21.0233.01

$$\int \frac{1}{(e^{c z})^{3/2}} \, dz = -\frac{2}{3 c (e^{c z})^{3/2}}$$

01.03.21.0234.01

$$\int \frac{1}{(e^{c z})^{5/2}} \, dz = -\frac{2}{5 c (e^{c z})^{5/2}}$$

With arguments $c z + b$ and base a

01.03.21.0235.01

$$\int \left(a^{b+c z}\right)^{\nu} \, dz = \frac{\left(a^{b+c z}\right)^{\nu}}{c \, \nu \log(a)}$$

With arguments $c z + b$

01.03.21.0236.01

$$\int \left(e^{b+c z}\right)^{\nu} \, dz = \frac{\left(e^{b+c z}\right)^{\nu}}{c \, \nu}$$

With arguments $c z^r$ and base a

01.03.21.0237.01

$$\int \left(a^{c z^r}\right)^{\nu} \, dz = -\frac{a^{-c z^r \nu} \left(a^{c z^r}\right)^{\nu} z \, \Gamma\!\left(\frac{1}{r}, -c z^r \nu \log(a)\right) (-c z^r \nu \log(a))^{-1/r}}{r}$$

01.03.21.0238.01

$$\int \left(a^{c z^2}\right)^{\nu} dz = \frac{a^{-c z^2 \nu} \left(a^{c z^2}\right)^{\nu} \sqrt{\pi} \operatorname{erfi}\left(\sqrt{c}\, z \sqrt{\nu}\, \log^{\frac{1}{2}}(a)\right)}{2 \sqrt{c} \sqrt{\nu} \log^{\frac{1}{2}}(a)}$$

01.03.21.0239.01

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

With arguments $c z^r$

01.03.21.0240.01

$$\int \left(e^{c z^r}\right)^{\nu} dz = -\frac{1}{r} e^{-c \nu z^r} \left(e^{c z^r}\right)^{\nu} z \left(-c \nu z^r\right)^{-1/r} \Gamma\left(\frac{1}{r}, -c \nu z^r\right)$$

01.03.21.0241.01

$$\int \left(e^{c z^2}\right)^{\nu} dz = \frac{e^{-c z^2 \nu} \left(e^{c z^2}\right)^{\nu} \sqrt{\pi} \operatorname{erfi}\left(\sqrt{c}\, z \sqrt{\nu}\right)}{2 \sqrt{c} \sqrt{\nu}}$$

01.03.21.0242.01

$$\int \left(e^{c \sqrt{z}}\right)^{\nu} dz = \frac{2 \left(e^{c \sqrt{z}}\right)^{\nu} \left(c \sqrt{z}\, \nu - 1\right)}{c^2 \nu^2}$$

With arguments $c z^r + d$ and base a

01.03.21.0243.01

$$\int \left(a^{c z^r + d}\right)^{\nu} dz = -\frac{a^{-c z^r \nu} \left(a^{c z^r + d}\right)^{\nu} z \Gamma\left(\frac{1}{r}, -c z^r \nu \log(a)\right) \left(-c z^r \nu \log(a)\right)^{-1/r}}{r}$$

01.03.21.0244.01

$$\int \left(a^{c z^2 + d}\right)^{\nu} dz = \frac{a^{-c z^2 \nu} \left(a^{c z^2 + d}\right)^{\nu} \sqrt{\pi} \operatorname{erfi}\left(\sqrt{c}\, z \sqrt{\nu}\, \log^{\frac{1}{2}}(a)\right)}{2 \sqrt{c} \sqrt{\nu} \log^{\frac{1}{2}}(a)}$$

01.03.21.0245.01

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

With arguments $c z^r + d$

01.03.21.0246.01

$$\int \left(e^{c z^r + d}\right)^{\nu} dz = -\frac{e^{-c z^r \nu} \left(e^{c z^r + d}\right)^{\nu} z \left(-c z^r \nu\right)^{-1/r} \Gamma\left(\frac{1}{r}, -c z^r \nu\right)}{r}$$

01.03.21.0247.01

$$\int \left(e^{c z^2+d}\right)^{\nu} dz = \frac{e^{-c z^2 \nu} \left(e^{c z^2+d}\right)^{\nu} \sqrt{\pi}\ \mathrm{erfi}\left(\sqrt{c}\ z \sqrt{\nu}\right)}{2 \sqrt{c}\ \sqrt{\nu}}$$

01.03.21.0248.01

$$\int \left(e^{\sqrt{z}\ c+d}\right)^{\nu} dz = \frac{2 \left(e^{\sqrt{z}\ c+d}\right)^{\nu} \left(c \sqrt{z}\ \nu - 1\right)}{c^2 \nu^2}$$

With arguments $c\,(z^r)^p$ and base a

01.03.21.0249.01

$$\int \left(a^{c (z^r)^p}\right)^{\nu} dz = -\frac{z \left(a^{c (z^r)^p}\right)^{\nu} \Gamma\left(\frac{1}{p r}, -c \nu (z^r)^p \log(a)\right) \left(-c \nu (z^r)^p \log(a)\right)^{-\frac{1}{p r}}}{p r a^{c \nu (z^r)^p}}$$

01.03.21.0250.01

$$\int \left(a^{c (z^r)^{\frac{1}{r}}}\right)^{\nu} dz = \frac{\left(a^{c (z^r)^{\frac{1}{r}}}\right)^{\nu} z (z^r)^{-1/r}}{c \nu \operatorname{Log}[a]}$$

01.03.21.0251.01

$$\int \left(a^{c \sqrt{z^2}}\right)^{\nu} dz = \frac{\left(a^{c \sqrt{z^2}}\right)^{\nu} \sqrt{z^2}}{c \nu z \log(a)}$$

With arguments $c\,(z^r)^p$

01.03.21.0252.01

$$\int \left(e^{c (z^r)^p}\right)^{\nu} dz = -\frac{e^{-c \nu (z^r)^p} \left(e^{c (z^r)^p}\right)^{\nu} z \left(-c \nu (z^r)^p\right)^{-\frac{1}{p r}} \Gamma\left(\frac{1}{p r}, -c \nu (z^r)^p\right)}{p r}$$

01.03.21.0253.01

$$\int \left(e^{c (z^r)^{1/r}}\right)^{\nu} dz = \frac{\left(e^{c (z^r)^{1/r}}\right)^{\nu} z (z^r)^{-1/r}}{c \nu}$$

01.03.21.0254.01

$$\int \left(e^{c \sqrt{z^2}}\right)^{\nu} dz = \frac{\left(e^{c \sqrt{z^2}}\right)^{\nu} \sqrt{z^2}}{c \nu z}$$

With arguments $c\,(z^r)^p + d$ and base a

01.03.21.0255.01

$$\int \left(a^{c (z^r)^p+d}\right)^{\nu} dz = -\frac{z \left(a^{c (z^r)^p+d}\right)^{\nu} \Gamma\left(\frac{1}{p r}, -c \nu (z^r)^p \log(a)\right) \left(-c \nu (z^r)^p \log(a)\right)^{-\frac{1}{p r}}}{p r a^{c \nu (z^r)^p}}$$

01.03.21.0256.01

$$\int \left(a^{c\,(z^r)^{1/r}+d}\right)^{\nu} dz = \frac{\left(a^{c\,(z^r)^{1/r}+d}\right)^{\nu} z\,(z^r)^{-1/r}}{c\,\nu\log(a)}$$

01.03.21.0257.01

$$\int \left(a^{\sqrt{z^2}\,c+d}\right)^{\nu} dz = \frac{\left(a^{\sqrt{z^2}\,c+d}\right)^{\nu} \sqrt{z^2}}{c\,\nu\,z\log(a)}$$

With arguments $c\,(z^r)^p + d$

01.03.21.0258.01

$$\int \left(e^{c\,(z^r)^p+d}\right)^{\nu} dz = -\frac{e^{-c\,\nu\,(z^r)^p} \left(e^{c\,(z^r)^p+d}\right)^{\nu} z\,(-c\,\nu\,(z^r)^p)^{-\frac{1}{p\,r}}\,\Gamma\!\left(\frac{1}{p\,r},\,-c\,\nu\,(z^r)^p\right)}{p\,r}$$

01.03.21.0259.01

$$\int \left(e^{c\,(z^r)^{1/r}+d}\right)^{\nu} dz = \frac{\left(e^{c\,(z^r)^{1/r}+d}\right)^{\nu} z\,(z^r)^{-1/r}}{c\,\nu}$$

01.03.21.0260.01

$$\int \left(e^{\sqrt{z^2}\,c+d}\right)^{\nu} dz = \frac{\left(e^{\sqrt{z^2}\,c+d}\right)^{\nu} \sqrt{z^2}}{c\,\nu\,z}$$

With arguments $a\,z^2 + \frac{b}{z^2}$

01.03.21.0261.01

$$\int \left(e^{a\,z^2+\frac{b}{z^2}}\right)^{\nu} dz = \frac{1}{4\sqrt{-a\,\nu}} \left(e^{-\frac{(a\,z^4+b)\,\nu}{z^2}-2\sqrt{-a\,\nu}\,\sqrt{-b\,\nu}} \left(e^{a\,z^2+\frac{b}{z^2}}\right)^{\nu} \sqrt{\pi} \left(e^{4\sqrt{-a\,\nu}\,\sqrt{-b\,\nu}} \left(\operatorname{erf}\!\left(\sqrt{-a\,\nu}\,z+\frac{\sqrt{-b\,\nu}}{z}\right)-1\right)+\operatorname{erf}\!\left(z\sqrt{-a\,\nu}-\frac{\sqrt{-b\,\nu}}{z}\right)+1\right)\right)$$

With arguments $a\,z^2 + \frac{b}{z^2} + c$

01.03.21.0262.01

$$\int \left(e^{a\,z^2+\frac{b}{z^2}+c}\right)^{\nu} dz = \frac{1}{4\sqrt{-a\,\nu}} \left(e^{-\frac{(a\,z^4+b)\,\nu}{z^2}-2\sqrt{-a\,\nu}\,\sqrt{-b\,\nu}} \left(e^{a\,z^2+c+\frac{b}{z^2}}\right)^{\nu} \sqrt{\pi} \left(e^{4\sqrt{-a\,\nu}\,\sqrt{-b\,\nu}} \left(\operatorname{erf}\!\left(\sqrt{-a\,\nu}\,z+\frac{\sqrt{-b\,\nu}}{z}\right)-1\right)+\operatorname{erf}\!\left(z\sqrt{-a\,\nu}-\frac{\sqrt{-b\,\nu}}{z}\right)+1\right)\right)$$

Involving products of the direct function

Involving products of two direct functions

Involving $a^{d z} h^{c z}$

01.03.21.0263.01

$$\int a^{d z} h^{c z} \, dz = \frac{a^{d z} h^{c z}}{d \log(a) + c \log(h)}$$

Involving $a^{d z} h^{c z+g}$

01.03.21.0264.01

$$\int a^{d z} h^{g+c z} \, dz = \frac{a^{d z} h^{g+c z}}{d \log(a) + c \log(h)}$$

Involving $a^{d z+e} h^{c z+g}$

01.03.21.0265.01

$$\int a^{e+d z} h^{g+c z} \, dz = \frac{a^{e+d z} h^{g+c z}}{d \log(a) + c \log(h)}$$

Involving $a^{d z} h^{c z^r}$

01.03.21.0266.01

$$\int a^{d z} h^{c z^2} \, dz = \frac{e^{-\frac{d^2 \log^2(a)}{4 c \log(h)}} \sqrt{\pi} \operatorname{erfi}\left(\frac{d \log(a)+2 c z \log(h)}{2 \sqrt{c \log(h)}}\right)}{2 \sqrt{c \log(h)}}$$

01.03.21.0267.01

$$\int a^{d z} h^{\sqrt{z} c} \, dz = \frac{1}{2} \left(\frac{2 a^{d z} h^{c \sqrt{z}}}{d \log(a)} - \frac{c \, e^{-\frac{c^2 \log^2(h)}{4 d \log(a)}} \sqrt{\pi} \operatorname{erfi}\left(\frac{2 d \sqrt{z} \log(a)+c \log(h)}{2 \sqrt{d \log(a)}}\right) \log(h)}{(d \log(a))^{3/2}} \right)$$

Involving $a^{d z+e} h^{c z^r}$

01.03.21.0268.01

$$\int a^{e+d z} h^{c z^2} \, dz = \frac{a^e e^{-\frac{d^2 \log^2(a)}{4 c \log(h)}} \sqrt{\pi} \operatorname{erfi}\left(\frac{d \log(a)+2 c z \log(h)}{2 \sqrt{c \log(h)}}\right)}{2 \sqrt{c \log(h)}}$$

01.03.21.0269.01

$$\int a^{d z+e} h^{\sqrt{z} c} \, dz = \frac{1}{2} a^e \left(\frac{2 a^{d z} h^{c \sqrt{z}}}{d \log(a)} - \frac{c \, e^{-\frac{c^2 \log^2(h)}{4 d \log(a)}} \sqrt{\pi} \operatorname{erfi}\left(\frac{2 d \sqrt{z} \log(a)+c \log(h)}{2 \sqrt{d \log(a)}}\right) \log(h)}{(d \log(a))^{3/2}} \right)$$

Involving $a^{b z^r} h^{c z^r}$

01.03.21.0270.01

$$\int a^{b z^r} h^{c z^r} \, dz = -\frac{z\, \Gamma\left(\frac{1}{r}, -z^r (b \log(a) + c \log(h))\right) (-z^r (b \log(a) + c \log(h)))^{-1/r}}{r}$$

01.03.21.0271.01

$$\int a^{b z^2} h^{c z^2} \, dz = \frac{\sqrt{\pi}\, \operatorname{erfi}\left(z \sqrt{b \log(a) + c \log(h)}\right)}{2 \sqrt{b \log(a) + c \log(h)}}$$

01.03.21.0272.01

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

Involving $a^{d z} h^{c z^r + g}$

01.03.21.0273.01

$$\int a^{d z} h^{c z^2 + g} \, dz = \frac{e^{-\frac{d^2 \log^2(a)}{4 c \log(h)}}\, h^g \sqrt{\pi}\, \operatorname{erfi}\left(\frac{d \log(a) + 2 c z \log(h)}{2 \sqrt{c \log(h)}}\right)}{2 \sqrt{c \log(h)}}$$

01.03.21.0274.01

$$\int a^{d z} h^{\sqrt{z}\, c + g} \, dz = \frac{1}{2} h^g \left(\frac{2\, a^{d z}\, h^{c \sqrt{z}}}{d \log(a)} - \frac{c\, e^{-\frac{c^2 \log^2(h)}{4 d \log(a)}} \sqrt{\pi}\, \operatorname{erfi}\left(\frac{2 d \sqrt{z} \log(a) + c \log(h)}{2 \sqrt{d \log(a)}}\right) \log(h)}{(d \log(a))^{3/2}}\right)$$

Involving $a^{d z + e} h^{c z^r + g}$

01.03.21.0275.01

$$\int a^{e + d z} h^{c z^2 + g} \, dz = \frac{a^e\, e^{-\frac{d^2 \log^2(a)}{4 c \log(h)}}\, h^g \sqrt{\pi}\, \operatorname{erfi}\left(\frac{d \log(a) + 2 c z \log(h)}{2 \sqrt{c \log(h)}}\right)}{2 \sqrt{c \log(h)}}$$

01.03.21.0276.01

$$\int a^{d z + e} h^{\sqrt{z}\, c + g} \, dz = \frac{1}{2} a^e h^g \left(\frac{2\, a^{d z}\, h^{c \sqrt{z}}}{d \log(a)} - \frac{c\, e^{-\frac{c^2 \log^2(h)}{4 d \log(a)}} \sqrt{\pi}\, \operatorname{erfi}\left(\frac{2 d \sqrt{z} \log(a) + c \log(h)}{2 \sqrt{d \log(a)}}\right) \log(h)}{(d \log(a))^{3/2}}\right)$$

Involving $a^{b z^r} h^{c z^r + g}$

01.03.21.0277.01

$$\int a^{b z^r} h^{c z^r+g} \, dz = -\frac{h^g z \, \Gamma\left(\frac{1}{r}, -z^r (b \log(a) + c \log(h))\right) (-z^r (b \log(a) + c \log(h)))^{-1/r}}{r}$$

01.03.21.0278.01

$$\int a^{b z^2} h^{c z^2+g} \, dz = \frac{h^g \sqrt{\pi} \, \operatorname{erfi}\left(z \sqrt{b \log(a) + c \log(h)}\right)}{2 \sqrt{b \log(a) + c \log(h)}}$$

01.03.21.0279.01

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

Involving $a^{b z^r+e} h^{c z^r+g}$

01.03.21.0280.01

$$\int a^{b z^r+e} h^{c z^r+g} \, dz = -\frac{a^e h^g z \, \Gamma\left(\frac{1}{r}, -z^r (b \log(a) + c \log(h))\right) (-z^r (b \log(a) + c \log(h)))^{-1/r}}{r}$$

01.03.21.0281.01

$$\int a^{b z^2+e} h^{c z^2+g} \, dz = \frac{a^e h^g \sqrt{\pi} \, \operatorname{erfi}\left(z \sqrt{b \log(a) + c \log(h)}\right)}{2 \sqrt{b \log(a) + c \log(h)}}$$

01.03.21.0282.01

$$\int a^{\sqrt{z}\, b+e} h^{\sqrt{z}\, c+g} \, dz = 2 a^{b \sqrt{z}} h^{c \sqrt{z}} \left(\frac{a^e h^g \sqrt{z}}{b \log(a) + c \log(h)} - \frac{a^e h^g}{(b \log(a) + c \log(h))^2}\right)$$

Involving $a^{d z} h^{c z^r+f z}$

01.03.21.0283.01

$$\int a^{d z} h^{c z^2+f z} \, dz = \frac{e^{-\frac{(d \log(a)+f \log(h))^2}{4 c \log(h)}} \sqrt{\pi} \, \operatorname{erfi}\left(\frac{d \log(a)+(f+2 c z) \log(h)}{2 \sqrt{c \log(h)}}\right)}{2 \sqrt{c \log(h)}}$$

01.03.21.0284.01

$$\int a^{d z} h^{\sqrt{z}\, c+f z} \, dz = \frac{1}{2} \left(\frac{2 a^{d z} h^{\sqrt{z}\, c+f z}}{d \log(a) + f \log(h)} - \frac{c \, e^{-\frac{c^2 \log^2(h)}{4 (d \log(a)+f \log(h))}} \sqrt{\pi} \, \operatorname{erfi}\left(\frac{c \log(h)+2 \sqrt{z} \, (d \log(a)+f \log(h))}{2 \sqrt{d \log(a)+f \log(h)}}\right) \log(h)}{(d \log(a) + f \log(h))^{3/2}}\right)$$

Involving $a^{d z+e} h^{c z^r+f z}$

01.03.21.0285.01

$$\int a^{e+d z} h^{c z^2+f z} \, dz = \frac{a^e e^{-\frac{(d \log(a)+f \log(h))^2}{4 c \log(h)}} \sqrt{\pi} \operatorname{erfi}\left(\frac{d \log(a)+(f+2 c z) \log(h)}{2 \sqrt{c \log(h)}}\right)}{2 \sqrt{c \log(h)}}$$

01.03.21.0286.01

$$\int a^{d z+e} h^{\sqrt{z} c+f z} \, dz = \frac{1}{2} a^e \left(\frac{2 a^{d z} h^{\sqrt{z} c+f z}}{d \log(a)+f \log(h)} - \frac{c e^{-\frac{c^2 \log^2(h)}{4 (d \log(a)+f \log(h))}} \sqrt{\pi} \operatorname{erfi}\left(\frac{c \log(h)+2 \sqrt{z} (d \log(a)+f \log(h))}{2 \sqrt{d \log(a)+f \log(h)}}\right) \log(h)}{(d \log(a)+f \log(h))^{3/2}}\right)$$

Involving $a^{b z^r} h^{c z^r+f z}$

01.03.21.0287.01

$$\int a^{b z^2} h^{c z^2+f z} \, dz = \frac{e^{-\frac{f^2 \log^2(h)}{4 (b \log(a)+c \log(h))}} \sqrt{\pi} \operatorname{erfi}\left(\frac{2 b z \log(a)+(f+2 c z) \log(h)}{2 \sqrt{b \log(a)+c \log(h)}}\right)}{2 \sqrt{b \log(a)+c \log(h)}}$$

01.03.21.0288.01

$$\int a^{\sqrt{z} b} h^{\sqrt{z} c+f z} \, dz = \frac{1}{2} \left(\frac{2 a^{b \sqrt{z}} h^{\sqrt{z} c+f z}}{f \log(h)} - \frac{e^{-\frac{(b \log(a)+c \log(h))^2}{4 f \log(h)}} \sqrt{\pi} \operatorname{erfi}\left(\frac{b \log(a)+c \log(h)+2 f \sqrt{z} \log(h)}{2 \sqrt{f \log(h)}}\right) (b \log(a)+c \log(h))}{(f \log(h))^{3/2}}\right)$$

Involving $a^{b z^r+e} h^{c z^r+f z}$

01.03.21.0289.01

$$\int a^{b z^2+e} h^{c z^2+f z} \, dz = \frac{a^e e^{-\frac{f^2 \log^2(h)}{4 (b \log(a)+c \log(h))}} \sqrt{\pi} \operatorname{erfi}\left(\frac{2 b z \log(a)+(f+2 c z) \log(h)}{2 \sqrt{b \log(a)+c \log(h)}}\right)}{2 \sqrt{b \log(a)+c \log(h)}}$$

01.03.21.0290.01

$$\int a^{\sqrt{z} b+e} h^{\sqrt{z} c+f z} \, dz = \frac{1}{2} a^e \left(\frac{2 a^{b \sqrt{z}} h^{\sqrt{z} c+f z}}{f \log(h)} - \frac{e^{-\frac{(b \log(a)+c \log(h))^2}{4 f \log(h)}} \sqrt{\pi} \operatorname{erfi}\left(\frac{b \log(a)+c \log(h)+2 f \sqrt{z} \log(h)}{2 \sqrt{f \log(h)}}\right) (b \log(a)+c \log(h))}{(f \log(h))^{3/2}}\right)$$

Involving $a^{b z^r+d z} h^{c z^r+f z}$

01.03.21.0291.01

$$\int a^{b z^2+d z} h^{c z^2+f z} \, dz = \frac{e^{-\frac{(d \log(a)+f \log(h))^2}{4 (b \log(a)+c \log(h))}} \sqrt{\pi} \operatorname{erfi}\left(\frac{(d+2 b z) \log(a)+(f+2 c z) \log(h)}{2 \sqrt{b \log(a)+c \log(h)}}\right)}{2 \sqrt{b \log(a)+c \log(h)}}$$

01.03.21.0292.01

$$\int a^{\sqrt{z}\, b+d z} h^{\sqrt{z}\, c+f z} \, dz = \frac{1}{2} \left(\frac{2 a^{\sqrt{z}\, b+d z} h^{\sqrt{z}\, c+f z}}{d \log(a)+f \log(h)} - \frac{e^{-\frac{(b \log(a)+c \log(h))^2}{4 (d \log(a)+f \log(h))}} \sqrt{\pi} \operatorname{erfi}\left(\frac{b \log(a)+c \log(h)+2 \sqrt{z}\, (d \log(a)+f \log(h))}{2 \sqrt{d \log(a)+f \log(h)}}\right) (b \log(a)+c \log(h))}{(d \log(a)+f \log(h))^{3/2}}\right)$$

Involving $a^{d z} h^{c z^r+f z+g}$

01.03.21.0293.01

$$\int a^{d z} h^{c z^2+f z+g} \, dz = \frac{e^{-\frac{(d \log(a)+f \log(h))^2}{4 c \log(h)}} h^g \sqrt{\pi} \operatorname{erfi}\left(\frac{d \log(a)+(f+2 c z) \log(h)}{2 \sqrt{c \log(h)}}\right)}{2 \sqrt{c \log(h)}}$$

01.03.21.0294.01

$$\int a^{d z} h^{\sqrt{z}\, c+f z+g} \, dz = \frac{1}{2} h^g \left(\frac{2 a^{d z} h^{\sqrt{z}\, c+f z}}{d \log(a)+f \log(h)} - \frac{c\, e^{-\frac{c^2 \log^2(h)}{4 (d \log(a)+f \log(h))}} \sqrt{\pi} \operatorname{erfi}\left(\frac{c \log(h)+2 \sqrt{z}\, (d \log(a)+f \log(h))}{2 \sqrt{d \log(a)+f \log(h)}}\right) \log(h)}{(d \log(a)+f \log(h))^{3/2}}\right)$$

Involving $a^{d z+e} h^{c z^r+f z+g}$

01.03.21.0295.01

$$\int a^{e+d z} h^{c z^2+f z+g} \, dz = \frac{a^e\, e^{-\frac{(d \log(a)+f \log(h))^2}{4 c \log(h)}} h^g \sqrt{\pi} \operatorname{erfi}\left(\frac{d \log(a)+(f+2 c z) \log(h)}{2 \sqrt{c \log(h)}}\right)}{2 \sqrt{c \log(h)}}$$

01.03.21.0296.01

$$\int a^{d z+e} h^{\sqrt{z}\, c+f z+g} \, dz = \frac{1}{2} a^e h^g \left(\frac{2 a^{d z} h^{\sqrt{z}\, c+f z}}{d \log(a)+f \log(h)} - \frac{c\, e^{-\frac{c^2 \log^2(h)}{4 (d \log(a)+f \log(h))}} \sqrt{\pi} \operatorname{erfi}\left(\frac{c \log(h)+2 \sqrt{z}\, (d \log(a)+f \log(h))}{2 \sqrt{d \log(a)+f \log(h)}}\right) \log(h)}{(d \log(a)+f \log(h))^{3/2}}\right)$$

Involving $a^{b z^r+e} h^{c z^r+f z+g}$

01.03.21.0297.01

$$\int a^{b z^2} h^{c z^2+f z+g} \, dz = \frac{e^{-\frac{f^2 \log^2(h)}{4 (b \log(a)+c \log(h))}} h^g \sqrt{\pi} \operatorname{erfi}\left(\frac{2 b z \log(a)+(f+2 c z) \log(h)}{2 \sqrt{b \log(a)+c \log(h)}}\right)}{2 \sqrt{b \log(a)+c \log(h)}}$$

01.03.21.0298.01

$$\int a^{\sqrt{z}\, b} h^{\sqrt{z}\, c+f z+g} \, dz = \frac{1}{2} h^g \left(\frac{2 a^{b \sqrt{z}} h^{\sqrt{z}\, c+f z}}{f \log(h)} - \frac{e^{-\frac{(b \log(a)+c \log(h))^2}{4 f \log(h)}} \sqrt{\pi} \operatorname{erfi}\left(\frac{b \log(a)+c \log(h)+2 f \sqrt{z} \log(h)}{2 \sqrt{f \log(h)}}\right) (b \log(a)+c \log(h))}{(f \log(h))^{3/2}}\right)$$

Involving $a^{b z^r+e} h^{c z^r+f z+g}$

01.03.21.0299.01

$$\int a^{b z^2+e} h^{c z^2+f z+g} \, dz = \frac{a^e e^{-\frac{f^2 \log^2(h)}{4 (b \log(a)+c \log(h))}} h^g \sqrt{\pi} \operatorname{erfi}\left(\frac{2 b z \log(a)+(f+2 c z) \log(h)}{2 \sqrt{b \log(a)+c \log(h)}}\right)}{2 \sqrt{b \log(a)+c \log(h)}}$$

01.03.21.0300.01

$$\int a^{\sqrt{z}\, b+e} h^{\sqrt{z}\, c+f z+g} \, dz = \frac{1}{2} a^e h^g \left(\frac{2 a^{b \sqrt{z}} h^{\sqrt{z}\, c+f z}}{f \log(h)} - \frac{e^{-\frac{(b \log(a)+c \log(h))^2}{4 f \log(h)}} \sqrt{\pi} \operatorname{erfi}\left(\frac{b \log(a)+c \log(h)+2 f \sqrt{z} \log(h)}{2 \sqrt{f \log(h)}}\right) (b \log(a)+c \log(h))}{(f \log(h))^{3/2}}\right)$$

Involving $a^{b z^r+d z} h^{c z^r+f z+g}$

01.03.21.0301.01

$$\int a^{b z^2+d z} h^{c z^2+f z+g} \, dz = \frac{e^{-\frac{(d \log(a)+f \log(h))^2}{4 (b \log(a)+c \log(h))}} h^g \sqrt{\pi} \operatorname{erfi}\left(\frac{(d+2 b z) \log(a)+(f+2 c z) \log(h)}{2 \sqrt{b \log(a)+c \log(h)}}\right)}{2 \sqrt{b \log(a)+c \log(h)}}$$

01.03.21.0302.01

$$\int a^{\sqrt{z}\, b+d z} h^{\sqrt{z}\, c+f z+g} \, dz =$$

$$\frac{1}{2} h^g \left(\frac{2 a^{\sqrt{z}\, b+d z} h^{\sqrt{z}\, c+f z}}{d \log(a)+f \log(h)} - \frac{e^{-\frac{(b \log(a)+c \log(h))^2}{4 (d \log(a)+f \log(h))}} \sqrt{\pi} \operatorname{erfi}\left(\frac{b \log(a)+c \log(h)+2 \sqrt{z} (d \log(a)+f \log(h))}{2 \sqrt{d \log(a)+f \log(h)}}\right) (b \log(a)+c \log(h))}{(d \log(a)+f \log(h))^{3/2}}\right)$$

Involving $a^{b z^r+d z+e} h^{c z^r+f z+g}$

01.03.21.0303.01

$$\int a^{b z^2+d z+e} h^{c z^2+f z+g} \, dz = \frac{a^e e^{-\frac{(d \log(a)+f \log(h))^2}{4 (b \log(a)+c \log(h))}} h^g \sqrt{\pi} \operatorname{erfi}\left(\frac{(d+2 b z) \log(a)+(f+2 c z) \log(h)}{2 \sqrt{b \log(a)+c \log(h)}}\right)}{2 \sqrt{b \log(a)+c \log(h)}}$$

01.03.21.0304.01

$$\int a^{\sqrt{z}\, b+d z+e} h^{\sqrt{z}\, c+f z+g} \, dz = \frac{1}{2} a^e h^g \left(\frac{2 a^{\sqrt{z}\, b+d z} h^{\sqrt{z}\, c+f z}}{d \log(a)+f \log(h)} - \frac{e^{-\frac{(b \log(a)+c \log(h))^2}{4 (d \log(a)+f \log(h))}} \sqrt{\pi} \operatorname{erfi}\left(\frac{b \log(a)+c \log(h)+2 \sqrt{z} \, (d \log(a)+f \log(h))}{2 \sqrt{d \log(a)+f \log(h)}}\right) (b \log(a)+c \log(h))}{(d \log(a)+f \log(h))^{3/2}}\right)$$

Involving products of several direct functions

Linear arguments

01.03.21.0305.01

$$\int a^{d z} b^{e z} c^{f z} \, dz = \frac{a^{d z} b^{e z} c^{f z}}{d \log(a)+e \log(b)+f \log(c)}$$

Involving products of powers of the direct function

Involving product of power of the direct function and the direct function

Involving $e^{c z} \left(e^{a z}\right)^{\nu}$

01.03.21.0306.01

$$\int e^{c z} \left(e^{a z}\right)^{\nu} \, dz = \frac{\left(e^{a z}\right)^{\nu} e^{c z}}{a \nu + c}$$

Involving $e^{c z+d} \left(e^{a z}\right)^{\nu}$

01.03.21.0307.01

$$\int e^{d+c z} \left(e^{a z}\right)^{\nu} \, dz = \frac{\left(e^{a z}\right)^{\nu} e^{d+c z}}{c + a \nu}$$

Involving $e^{c z} \left(e^{a z+b}\right)^{\nu}$

01.03.21.0308.01

$$\int e^{c z} \left(e^{b+a z}\right)^{\nu} \, dz = \frac{\left(e^{b+a z}\right)^{\nu} e^{c z}}{c + a \nu}$$

Involving $e^{c z+d} \left(e^{a z+b}\right)^{\nu}$

01.03.21.0309.01

$$\int e^{d+c z} \left(e^{b+a z}\right)^{\nu} \, dz = \frac{\left(e^{b+a z}\right)^{\nu} e^{d+c z}}{c+a \nu}$$

Involving $e^{b z^{r}} \left(e^{c z}\right)^{\nu}$

01.03.21.0310.01

$$\int e^{b z^2} \left(e^{c z}\right)^{\nu} \, dz = \frac{e^{b z^2-\frac{(2 b z+c \nu)^2}{4 b}} \left(e^{c z}\right)^{\nu} \sqrt{\pi} \, \operatorname{erfi}\left(\frac{2 b z+c \nu}{2 \sqrt{b}}\right)}{2 \sqrt{b}}$$

01.03.21.0311.01

$$\int e^{\sqrt{z} \, b} \left(e^{c z}\right)^{\nu} \, dz = \frac{e^{-\frac{\left(b+2 c \sqrt{z} \, \nu\right)^2}{4 c \nu}+b \sqrt{z}} \left(e^{c z}\right)^{\nu} \left(2 e^{\frac{\left(b+2 c \sqrt{z} \, \nu\right)^2}{4 c \nu}} \sqrt{c \nu} - b \sqrt{\pi} \, \operatorname{erfi}\left(\frac{b+2 c \sqrt{z} \, \nu}{2 \sqrt{c \nu}}\right)\right)}{2 (c \nu)^{3/2}}$$

Involving $e^{b z^{r}+e} \left(e^{c z}\right)^{\nu}$

01.03.21.0312.01

$$\int e^{b z^2+e} \left(e^{c z}\right)^{\nu} \, dz = \frac{e^{b z^2+e-\frac{(2 b z+c \nu)^2}{4 b}} \left(e^{c z}\right)^{\nu} \sqrt{\pi} \, \operatorname{erfi}\left(\frac{2 b z+c \nu}{2 \sqrt{b}}\right)}{2 \sqrt{b}}$$

01.03.21.0313.01

$$\int e^{\sqrt{z} \, b+e} \left(e^{c z}\right)^{\nu} \, dz = \frac{e^{-\frac{\left(b+2 c \sqrt{z} \, \nu\right)^2}{4 c \nu}+e+b \sqrt{z}} \left(e^{c z}\right)^{\nu} \left(2 e^{\frac{\left(b+2 c \sqrt{z} \, \nu\right)^2}{4 c \nu}} \sqrt{c \nu} - b \sqrt{\pi} \, \operatorname{erfi}\left(\frac{b+2 c \sqrt{z} \, \nu}{2 \sqrt{c \nu}}\right)\right)}{2 (c \nu)^{3/2}}$$

Involving $e^{b z^{r}+d z} \left(e^{c z}\right)^{\nu}$

01.03.21.0314.01

$$\int e^{b z^2+d z} \left(e^{c z}\right)^{\nu} \, dz = \frac{e^{-\frac{(d+2 b z+c \nu)^2}{4 b}+z (d+b z)} \left(e^{c z}\right)^{\nu} \sqrt{\pi} \, \operatorname{erfi}\left(\frac{d+2 b z+c \nu}{2 \sqrt{b}}\right)}{2 \sqrt{b}}$$

01.03.21.0315.01

$$\int e^{\sqrt{z} \, b+d z} \left(e^{c z}\right)^{\nu} \, dz =$$

$$\frac{1}{2 (d+c \nu)^{3/2}} \left(e^{-\frac{\left(b+2 c \sqrt{z} \, \nu+2 d \sqrt{z}\right)^2}{4 (d+c \nu)}+d z+b \sqrt{z}} \left(e^{c z}\right)^{\nu} \left(2 e^{\frac{\left(b+2 c \sqrt{z} \, \nu+2 d \sqrt{z}\right)^2}{4 (d+c \nu)}} \sqrt{d+c \nu} - b \sqrt{\pi} \, \operatorname{erfi}\left(\frac{b+2 c \sqrt{z} \, \nu+2 d \sqrt{z}}{2 \sqrt{d+c \nu}}\right)\right)\right)$$

Involving $e^{b z^r + d z + e} \left(e^{c z}\right)^\nu$

01.03.21.0316.01

$$\int e^{b z^2 + d z + e} \left(e^{c z}\right)^\nu \, dz = \frac{e^{-\frac{(d + 2 b z + c \nu)^2}{4 b} + e + z (d + b z)} \left(e^{c z}\right)^\nu \sqrt{\pi} \, \operatorname{erfi}\left(\frac{d + 2 b z + c \nu}{2 \sqrt{b}}\right)}{2 \sqrt{b}}$$

01.03.21.0317.01

$$\int e^{\sqrt{z}\, b + d z + e} \left(e^{c z}\right)^\nu \, dz =$$

$$\frac{1}{2 (d + c \nu)^{3/2}} \left(e^{-\frac{\left(b + 2 c \sqrt{z}\, \nu + 2 d \sqrt{z}\right)^2}{4 (d + c \nu)} + e + d z + b \sqrt{z}} \left(e^{c z}\right)^\nu \left(2 e^{\frac{\left(b + 2 c \sqrt{z}\, \nu + 2 d \sqrt{z}\right)^2}{4 (d + c \nu)}} \sqrt{d + c \nu} - b \sqrt{\pi} \, \operatorname{erfi}\left(\frac{b + 2 c \sqrt{z}\, \nu + 2 d \sqrt{z}}{2 \sqrt{d + c \nu}}\right)\right)\right)$$

Involving $e^{b z^r} \left(e^{f z + g}\right)^\nu$

01.03.21.0318.01

$$\int e^{b z^2} \left(e^{f z + g}\right)^\nu \, dz = \frac{e^{b z^2 - \frac{(2 b z + f \nu)^2}{4 b}} \left(e^{g + f z}\right)^\nu \sqrt{\pi} \, \operatorname{erfi}\left(\frac{2 b z + f \nu}{2 \sqrt{b}}\right)}{2 \sqrt{b}}$$

01.03.21.0319.01

$$\int e^{\sqrt{z}\, b} \left(e^{f z + g}\right)^\nu \, dz = \frac{e^{-\frac{\left(b + 2 f \sqrt{z}\, \nu\right)^2}{4 f \nu} + b \sqrt{z}} \left(e^{g + f z}\right)^\nu \left(2 e^{\frac{\left(b + 2 f \sqrt{z}\, \nu\right)^2}{4 f \nu}} \sqrt{f \nu} - b \sqrt{\pi} \, \operatorname{erfi}\left(\frac{b + 2 f \sqrt{z}\, \nu}{2 \sqrt{f \nu}}\right)\right)}{2 (f \nu)^{3/2}}$$

Involving $e^{b z^r + e} \left(e^{f z + g}\right)^\nu$

01.03.21.0320.01

$$\int e^{b z^2 + e} \left(e^{f z + g}\right)^\nu \, dz = \frac{e^{b z^2 + e - \frac{(2 b z + f \nu)^2}{4 b}} \left(e^{g + f z}\right)^\nu \sqrt{\pi} \, \operatorname{erfi}\left(\frac{2 b z + f \nu}{2 \sqrt{b}}\right)}{2 \sqrt{b}}$$

01.03.21.0321.01

$$\int e^{\sqrt{z}\, b + e} \left(e^{f z + g}\right)^\nu \, dz = \frac{e^{-\frac{\left(b + 2 f \sqrt{z}\, \nu\right)^2}{4 f \nu} + e + b \sqrt{z}} \left(e^{g + f z}\right)^\nu \left(2 e^{\frac{\left(b + 2 f \sqrt{z}\, \nu\right)^2}{4 f \nu}} \sqrt{f \nu} - b \sqrt{\pi} \, \operatorname{erfi}\left(\frac{b + 2 f \sqrt{z}\, \nu}{2 \sqrt{f \nu}}\right)\right)}{2 (f \nu)^{3/2}}$$

Involving $e^{b z^r + d z} \left(e^{f z + g}\right)^\nu$

01.03.21.0322.01

$$\int e^{b z^2 + d z} \left(e^{f z + g}\right)^\nu \, dz = \frac{e^{-\frac{(d + 2 b z + f \nu)^2}{4 b} + z (d + b z)} \left(e^{g + f z}\right)^\nu \sqrt{\pi} \, \operatorname{erfi}\left(\frac{d + 2 b z + f \nu}{2 \sqrt{b}}\right)}{2 \sqrt{b}}$$

01.03.21.0323.01

$$\int e^{\sqrt{z}\,b+d\,z}\left(e^{f\,z+g}\right)^{\nu}\,dz = \frac{1}{2\,(d+f\,\nu)^{3/2}}\left(e^{-\frac{\left(b+2\,f\,\sqrt{z}\,\nu+2\,d\,\sqrt{z}\right)^{2}}{4\,(d+f\,\nu)}+d\,z+b\,\sqrt{z}}\left(e^{g+f\,z}\right)^{\nu}\left(2\,e^{\frac{\left(b+2\,f\,\sqrt{z}\,\nu+2\,d\,\sqrt{z}\right)^{2}}{4\,(d+f\,\nu)}}\sqrt{d+f\,\nu}-b\,\sqrt{\pi}\,\operatorname{erfi}\left(\frac{b+2\,f\,\sqrt{z}\,\nu+2\,d\,\sqrt{z}}{2\,\sqrt{d+f\,\nu}}\right)\right)\right)$$

Involving $e^{b\,z^{r}+d\,z+e}\left(e^{f\,z+g}\right)^{\nu}$

01.03.21.0324.01

$$\int e^{b\,z^{2}+d\,z+e}\left(e^{f\,z+g}\right)^{\nu}\,dz = \frac{e^{-\frac{(d+2\,b\,z+f\,\nu)^{2}}{4\,b}+e+z\,(d+b\,z)}\left(e^{g+f\,z}\right)^{\nu}\sqrt{\pi}\,\operatorname{erfi}\left(\frac{d+2\,b\,z+f\,\nu}{2\,\sqrt{b}}\right)}{2\,\sqrt{b}}$$

01.03.21.0325.01

$$\int e^{\sqrt{z}\,b+d\,z+e}\left(e^{f\,z+g}\right)^{\nu}\,dz = \frac{1}{2\,(d+f\,\nu)^{3/2}}\left(e^{-\frac{\left(b+2\,f\,\sqrt{z}\,\nu+2\,d\,\sqrt{z}\right)^{2}}{4\,(d+f\,\nu)}+e+d\,z+b\,\sqrt{z}}\left(e^{g+f\,z}\right)^{\nu}\left(2\,e^{\frac{\left(b+2\,f\,\sqrt{z}\,\nu+2\,d\,\sqrt{z}\right)^{2}}{4\,(d+f\,\nu)}}\sqrt{d+f\,\nu}-b\,\sqrt{\pi}\,\operatorname{erfi}\left(\frac{b+2\,f\,\sqrt{z}\,\nu+2\,d\,\sqrt{z}}{2\,\sqrt{d+f\,\nu}}\right)\right)\right)$$

Involving $e^{b\,z}\left(e^{c\,z^{r}}\right)^{\nu}$

01.03.21.0326.01

$$\int e^{b\,z}\left(e^{c\,z^{2}}\right)^{\nu}\,dz = \frac{e^{-\frac{(b+2\,c\,z\,\nu)^{2}}{4\,c\,\nu}+b\,z}\left(e^{c\,z^{2}}\right)^{\nu}\sqrt{\pi}\,\operatorname{erfi}\left(\frac{b+2\,c\,z\,\nu}{2\,\sqrt{c\,\nu}}\right)}{2\,\sqrt{c\,\nu}}$$

01.03.21.0327.01

$$\int e^{b\,z}\left(e^{\sqrt{z}\,c}\right)^{\nu}\,dz = \frac{e^{-\frac{\left(2\,\sqrt{z}\,b+c\,\nu\right)^{2}}{4\,b}+b\,z}\left(e^{c\,\sqrt{z}}\right)^{\nu}\left(2\,\sqrt{b}\,e^{\frac{\left(2\,\sqrt{z}\,b+c\,\nu\right)^{2}}{4\,b}}-c\,\sqrt{\pi}\,\nu\,\operatorname{erfi}\left(\frac{2\,\sqrt{z}\,b+c\,\nu}{2\,\sqrt{b}}\right)\right)}{2\,b^{3/2}}$$

Involving $e^{d\,z+e}\left(e^{c\,z^{r}}\right)^{\nu}$

01.03.21.0328.01

$$\int e^{e+d\,z}\left(e^{c\,z^{2}}\right)^{\nu}\,dz = \frac{e^{-\frac{(d+2\,c\,z\,\nu)^{2}}{4\,c\,\nu}+e+d\,z}\left(e^{c\,z^{2}}\right)^{\nu}\sqrt{\pi}\,\operatorname{erfi}\left(\frac{d+2\,c\,z\,\nu}{2\,\sqrt{c\,\nu}}\right)}{2\,\sqrt{c\,\nu}}$$

01.03.21.0329.01

$$\int e^{d\,z+e}\left(e^{\sqrt{z}\,c}\right)^{\nu}\,dz = \frac{e^{-\frac{\left(2\,\sqrt{z}\,d+c\,\nu\right)^{2}}{4\,d}+e+d\,z}\left(e^{c\,\sqrt{z}}\right)^{\nu}\left(2\,\sqrt{d}\,e^{\frac{\left(2\,\sqrt{z}\,d+c\,\nu\right)^{2}}{4\,d}}-c\,\sqrt{\pi}\,\nu\,\operatorname{erfi}\left(\frac{2\,\sqrt{z}\,d+c\,\nu}{2\,\sqrt{d}}\right)\right)}{2\,d^{3/2}}$$

Involving $e^{b z^r} \left(e^{c z^r}\right)^\nu$

01.03.21.0330.01

$$\int e^{b z^r} \left(e^{c z^r}\right)^\nu dz = -\frac{e^{b z^r - (b + c\nu) z^r} \left(e^{c z^r}\right)^\nu z \left(-z^r (b + c\nu)\right)^{-1/r} \Gamma\left(\frac{1}{r}, -z^r (b + c\nu)\right)}{r}$$

01.03.21.0331.01

$$\int e^{b z^2} \left(e^{c z^2}\right)^\nu dz = \frac{e^{b z^2 - \frac{(2 b z + 2 c \nu z)^2}{4 (b + c\nu)}} \left(e^{c z^2}\right)^\nu \sqrt{\pi}\, \operatorname{erfi}\left(\frac{2 b z + 2 c \nu z}{2\sqrt{b + c\nu}}\right)}{2\sqrt{b + c\nu}}$$

01.03.21.0332.01

$$\int e^{\sqrt{z}\, b} \left(e^{c\sqrt{z}}\right)^\nu dz = \frac{2 e^{\sqrt{z}\, b} \left(e^{c\sqrt{z}}\right)^\nu \left(\sqrt{z}\, b + c\sqrt{z}\, \nu - 1\right)}{(b + c\nu)^2}$$

Involving $e^{b z^r + e} \left(e^{c z^r}\right)^\nu$

01.03.21.0333.01

$$\int e^{b z^r + e} \left(e^{c z^r}\right)^\nu dz = -\frac{e^{b z^r - (b + c\nu) z^r + e} \left(e^{c z^r}\right)^\nu z \left(-z^r (b + c\nu)\right)^{-1/r} \Gamma\left(\frac{1}{r}, -z^r (b + c\nu)\right)}{r}$$

01.03.21.0334.01

$$\int e^{b z^2 + e} \left(e^{c z^2}\right)^\nu dz = \frac{e^{b z^2 + e - \frac{(2 b z + 2 c \nu z)^2}{4 (b + c\nu)}} \left(e^{c z^2}\right)^\nu \sqrt{\pi}\, \operatorname{erfi}\left(\frac{2 b z + 2 c \nu z}{2\sqrt{b + c\nu}}\right)}{2\sqrt{b + c\nu}}$$

01.03.21.0335.01

$$\int e^{\sqrt{z}\, b + e} \left(e^{c\sqrt{z}}\right)^\nu dz = \frac{2 e^{\sqrt{z}\, b + e} \left(e^{c\sqrt{z}}\right)^\nu \left(\sqrt{z}\, b + c\sqrt{z}\, \nu - 1\right)}{(b + c\nu)^2}$$

Involving $e^{b z^r + d z} \left(e^{c z^r}\right)^\nu$

01.03.21.0336.01

$$\int e^{b z^2 + d z} \left(e^{c z^2}\right)^\nu dz = \frac{e^{-\frac{(d + 2 b z + 2 c z \nu)^2}{4 (b + c\nu)} + z (d + b z)} \left(e^{c z^2}\right)^\nu \sqrt{\pi}\, \operatorname{erfi}\left(\frac{d + 2 b z + 2 c z \nu}{2\sqrt{b + c\nu}}\right)}{2\sqrt{b + c\nu}}$$

01.03.21.0337.01

$$\int e^{\sqrt{z}\, b + d z} \left(e^{\sqrt{z}\, c}\right)^\nu dz = \frac{e^{-\frac{\left(b + c\nu + 2 d\sqrt{z}\right)^2}{4 d} + d z + b\sqrt{z}} \left(e^{c\sqrt{z}}\right)^\nu \left(2\sqrt{d}\, e^{\frac{\left(b + c\nu + 2 d\sqrt{z}\right)^2}{4 d}} - \sqrt{\pi}\, (b + c\nu) \operatorname{erfi}\left(\frac{b + c\nu + 2 d\sqrt{z}}{2\sqrt{d}}\right)\right)}{2 d^{3/2}}$$

Involving $e^{b z^r + d z + e} \left(e^{c z^r}\right)^\nu$

01.03.21.0338.01

$$\int e^{b z^2+d z+e} \left(e^{c z^2}\right)^\nu dz = \frac{e^{-\frac{(d+2 b z+2 c z \nu)^2}{4 (b+c \nu)}+e+z (d+b z)} \left(e^{c z^2}\right)^\nu \sqrt{\pi} \operatorname{erfi}\left(\frac{d+2 b z+2 c z \nu}{2 \sqrt{b+c \nu}}\right)}{2 \sqrt{b+c \nu}}$$

01.03.21.0339.01

$$\int e^{\sqrt{z} b+d z+e} \left(e^{\sqrt{z} c}\right)^\nu dz = \frac{e^{-\frac{\left(b+c \nu+2 d \sqrt{z}\right)^2}{4 d}+e+d z+b \sqrt{z}} \left(e^{c \sqrt{z}}\right)^\nu \left(2 \sqrt{d} e^{\frac{\left(b+c \nu+2 d \sqrt{z}\right)^2}{4 d}} - \sqrt{\pi} (b+c \nu) \operatorname{erfi}\left(\frac{b+c \nu+2 d \sqrt{z}}{2 \sqrt{d}}\right)\right)}{2 d^{3/2}}$$

Involving $e^{d z} \left(e^{c z^r+g}\right)^\nu$

01.03.21.0340.01

$$\int e^{d z} \left(e^{c z^2+g}\right)^\nu dz = \frac{e^{-\frac{(d+2 c z \nu)^2}{4 c \nu}+d z} \left(e^{c z^2+g}\right)^\nu \sqrt{\pi} \operatorname{erfi}\left(\frac{d+2 c z \nu}{2 \sqrt{c \nu}}\right)}{2 \sqrt{c \nu}}$$

01.03.21.0341.01

$$\int e^{d z} \left(e^{\sqrt{z} c+g}\right)^\nu dz = \frac{e^{-\frac{\left(2 \sqrt{z} d+c \nu\right)^2}{4 d}+d z} \left(e^{\sqrt{z} c+g}\right)^\nu \left(2 \sqrt{d} e^{\frac{\left(2 \sqrt{z} d+c \nu\right)^2}{4 d}} - c \sqrt{\pi} \nu \operatorname{erfi}\left(\frac{2 \sqrt{z} d+c \nu}{2 \sqrt{d}}\right)\right)}{2 d^{3/2}}$$

Involving $e^{d z+e} \left(e^{c z^r+g}\right)^\nu$

01.03.21.0342.01

$$\int e^{e+d z} \left(e^{c z^2+g}\right)^\nu dz = \frac{e^{-\frac{(d+2 c z \nu)^2}{4 c \nu}+e+d z} \left(e^{c z^2+g}\right)^\nu \sqrt{\pi} \operatorname{erfi}\left(\frac{d+2 c z \nu}{2 \sqrt{c \nu}}\right)}{2 \sqrt{c \nu}}$$

01.03.21.0343.01

$$\int e^{d z+e} \left(e^{\sqrt{z} c+g}\right)^\nu dz = \frac{e^{-\frac{\left(2 \sqrt{z} d+c \nu\right)^2}{4 d}+e+d z} \left(e^{\sqrt{z} c+g}\right)^\nu \left(2 \sqrt{d} e^{\frac{\left(2 \sqrt{z} d+c \nu\right)^2}{4 d}} - c \sqrt{\pi} \nu \operatorname{erfi}\left(\frac{2 \sqrt{z} d+c \nu}{2 \sqrt{d}}\right)\right)}{2 d^{3/2}}$$

Involving $e^{b z^r} \left(e^{c z^r+g}\right)^\nu$

01.03.21.0344.01

$$\int e^{b z^r} \left(e^{c z^r+g}\right)^\nu dz = -\frac{e^{b z^r-(b+c \nu) z^r} \left(e^{c z^r+g}\right)^\nu z \left(-z^r (b+c \nu)\right)^{-1/r} \Gamma\left(\frac{1}{r}, -z^r (b+c \nu)\right)}{r}$$

01.03.21.0345.01

$$\int e^{b z^2} \left(e^{c z^2+g}\right)^\nu dz = \frac{e^{b z^2-\frac{(2 b z+2 c \nu z)^2}{4 (b+c \nu)}} \left(e^{c z^2+g}\right)^\nu \sqrt{\pi} \operatorname{erfi}\left(\frac{2 b z+2 c \nu z}{2 \sqrt{b+c \nu}}\right)}{2 \sqrt{b+c \nu}}$$

01.03.21.0346.01

$$\int e^{\sqrt{z}\, b} \left(e^{\sqrt{z}\, c}+g\right)^{\nu} dz = \frac{2\, e^{\sqrt{z}\, b} \left(e^{\sqrt{z}\, c}+g\right)^{\nu} \left(\sqrt{z}\, b + c\sqrt{z}\, \nu - 1\right)}{(b+c\,\nu)^2}$$

Involving $e^{b\, z^r+e} \left(e^{c\, z^r}+g\right)^{\nu}$

01.03.21.0347.01

$$\int e^{b\, z^r+e} \left(e^{c\, z^r}+g\right)^{\nu} dz = -\frac{e^{b\, z^r-(b+c\,\nu)\, z^r+e} \left(e^{c\, z^r}+g\right)^{\nu} z \left(-z^r (b+c\,\nu)\right)^{-1/r} \Gamma\left(\frac{1}{r}, -z^r (b+c\,\nu)\right)}{r}$$

01.03.21.0348.01

$$\int e^{b\, z^2+e} \left(e^{c\, z^2}+g\right)^{\nu} dz = \frac{e^{b\, z^2+e-\frac{(2\, b\, z+2\, c\, \nu\, z)^2}{4\, (b+c\,\nu)}} \left(e^{c\, z^2}+g\right)^{\nu} \sqrt{\pi}\, \operatorname{erfi}\left(\frac{2\, b\, z+2\, c\, \nu\, z}{2\sqrt{b+c\,\nu}}\right)}{2\sqrt{b+c\,\nu}}$$

01.03.21.0349.01

$$\int e^{\sqrt{z}\, b+e} \left(e^{\sqrt{z}\, c}+g\right)^{\nu} dz = \frac{2\, e^{\sqrt{z}\, b+e} \left(e^{\sqrt{z}\, c}+g\right)^{\nu} \left(\sqrt{z}\, b + c\sqrt{z}\, \nu - 1\right)}{(b+c\,\nu)^2}$$

Involving $e^{b\, z^r+d\, z} \left(e^{c\, z^r}+g\right)^{\nu}$

01.03.21.0350.01

$$\int e^{b\, z^2+d\, z} \left(e^{c\, z^2}+g\right)^{\nu} dz = \frac{e^{-\frac{(d+2\, b\, z+2\, c\, z\, \nu)^2}{4\, (b+c\,\nu)}+z\, (d+b\, z)} \left(e^{c\, z^2}+g\right)^{\nu} \sqrt{\pi}\, \operatorname{erfi}\left(\frac{d+2\, b\, z+2\, c\, z\, \nu}{2\sqrt{b+c\,\nu}}\right)}{2\sqrt{b+c\,\nu}}$$

01.03.21.0351.01

$$\int e^{\sqrt{z}\, b+d\, z} \left(e^{\sqrt{z}\, c}+g\right)^{\nu} dz = \frac{1}{2\, d^{3/2}} \left(e^{-\frac{\left(b+c\,\nu+2\, d\sqrt{z}\right)^2}{4\, d}+d\, z+b\sqrt{z}} \left(e^{\sqrt{z}\, c}+g\right)^{\nu} \left(2\sqrt{d}\; e^{\frac{\left(b+c\,\nu+2\, d\sqrt{z}\right)^2}{4\, d}} - \sqrt{\pi}\, (b+c\,\nu)\, \operatorname{erfi}\left(\frac{b+c\,\nu+2\, d\sqrt{z}}{2\sqrt{d}}\right)\right)\right)$$

Involving $e^{b\, z^r+d\, z+e} \left(e^{c\, z^r}+g\right)^{\nu}$

01.03.21.0352.01

$$\int e^{b\, z^2+d\, z+e} \left(e^{c\, z^2}+g\right)^{\nu} dz = \frac{e^{-\frac{(d+2\, b\, z+2\, c\, z\, \nu)^2}{4\, (b+c\,\nu)}+e+z\, (d+b\, z)} \left(e^{c\, z^2}+g\right)^{\nu} \sqrt{\pi}\, \operatorname{erfi}\left(\frac{d+2\, b\, z+2\, c\, z\, \nu}{2\sqrt{b+c\,\nu}}\right)}{2\sqrt{b+c\,\nu}}$$

01.03.21.0353.01

$$\int e^{\sqrt{z}\, b+d\, z+e} \left(e^{\sqrt{z}\, c}+g\right)^{\nu} dz = \frac{1}{2\, d^{3/2}} \left(e^{-\frac{\left(b+c\,\nu+2\, d\sqrt{z}\right)^2}{4\, d}+e+d\, z+b\sqrt{z}} \left(e^{\sqrt{z}\, c}+g\right)^{\nu} \left(2\sqrt{d}\; e^{\frac{\left(b+c\,\nu+2\, d\sqrt{z}\right)^2}{4\, d}} - \sqrt{\pi}\, (b+c\,\nu)\, \operatorname{erfi}\left(\frac{b+c\,\nu+2\, d\sqrt{z}}{2\sqrt{d}}\right)\right)\right)$$

Involving $e^{d z} \left(e^{c z^r+f z}\right)^\nu$

01.03.21.0354.01

$$\int e^{d z} \left(e^{c z^2+f z}\right)^\nu \, dz = \frac{e^{d z-\frac{(d+(f+2 c z) \nu)^2}{4 c \nu}} \left(e^{z (f+c z)}\right)^\nu \sqrt{\pi} \operatorname{erfi}\left(\frac{d+(f+2 c z) \nu}{2 \sqrt{c \nu}}\right)}{2 \sqrt{c \nu}}$$

01.03.21.0355.01

$$\int e^{d z} \left(e^{\sqrt{z} c+f z}\right)^\nu \, dz = \frac{1}{2 (d+f \nu)^{3/2}} e^{d z-\frac{\left(2 \sqrt{z} d+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 (d+f \nu)}} \left(e^{\sqrt{z} c+f z}\right)^\nu \left(2 e^{\frac{\left(2 \sqrt{z} d+c \nu+2 f \sqrt{z} \nu\right)^2}{4 (d+f \nu)}} \sqrt{d+f \nu} - c \sqrt{\pi} \nu \operatorname{erfi}\left(\frac{2 \sqrt{z} d+c \nu+2 f \sqrt{z} \nu}{2 \sqrt{d+f \nu}}\right)\right)$$

Involving $e^{d z+e} \left(e^{c z^r+f z}\right)^\nu$

01.03.21.0356.01

$$\int e^{e+d z} \left(e^{c z^2+f z}\right)^\nu \, dz = \frac{e^{-\frac{(d+(f+2 c z) \nu)^2}{4 c \nu}+e+d z} \left(e^{z (f+c z)}\right)^\nu \sqrt{\pi} \operatorname{erfi}\left(\frac{d+(f+2 c z) \nu}{2 \sqrt{c \nu}}\right)}{2 \sqrt{c \nu}}$$

01.03.21.0357.01

$$\int e^{e+d z} \left(e^{\sqrt{z} c+f z}\right)^\nu \, dz = \frac{1}{2 (d+f \nu)^{3/2}} \left(e^{-\frac{\left(2 \sqrt{z} d+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 (d+f \nu)}+e+d z} \left(e^{\sqrt{z} c+f z}\right)^\nu \left(2 e^{\frac{\left(2 \sqrt{z} d+c \nu+2 f \sqrt{z} \nu\right)^2}{4 (d+f \nu)}} \sqrt{d+f \nu} - c \sqrt{\pi} \nu \operatorname{erfi}\left(\frac{2 \sqrt{z} d+c \nu+2 f \sqrt{z} \nu}{2 \sqrt{d+f \nu}}\right)\right)\right)$$

Involving $e^{b z^r} \left(e^{c z^r+f z}\right)^\nu$

01.03.21.0358.01

$$\int e^{b z^2} \left(e^{c z^2+f z}\right)^\nu \, dz = \frac{e^{b z^2-\frac{(2 b z+(f+2 c z) \nu)^2}{4 (b+c \nu)}} \left(e^{z (f+c z)}\right)^\nu \sqrt{\pi} \operatorname{erfi}\left(\frac{2 b z+(f+2 c z) \nu}{2 \sqrt{b+c \nu}}\right)}{2 \sqrt{b+c \nu}}$$

01.03.21.0359.01

$$\int e^{b \sqrt{z}} \left(e^{\sqrt{z} c+f z}\right)^\nu \, dz = \frac{e^{b \sqrt{z}-\frac{\left(b+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 f \nu}} \left(e^{\sqrt{z} c+f z}\right)^\nu \left(2 e^{\frac{\left(b+c \nu+2 f \sqrt{z} \nu\right)^2}{4 f \nu}} \sqrt{f \nu} - \sqrt{\pi} (b+c \nu) \operatorname{erfi}\left(\frac{b+c \nu+2 f \sqrt{z} \nu}{2 \sqrt{f \nu}}\right)\right)}{2 (f \nu)^{3/2}}$$

Involving $e^{b z^r+e} \left(e^{c z^r+f z}\right)^\nu$

01.03.21.0360.01

$$\int e^{b z^2+e}\left(e^{c z^2+f z}\right)^\nu \, dz = \frac{e^{b z^2+e-\frac{(2 b z+(f+2 c z)\nu)^2}{4(b+c\nu)}}\left(e^{z(f+c z)}\right)^\nu \sqrt{\pi}\, \operatorname{erfi}\left(\frac{2 b z+(f+2 c z)\nu}{2\sqrt{b+c\nu}}\right)}{2\sqrt{b+c\nu}}$$

01.03.21.0361.01

$$\int e^{\sqrt{z}\, b+e}\left(e^{\sqrt{z}\, c+f z}\right)^\nu \, dz = \frac{1}{2(f\nu)^{3/2}} e^{-\frac{\left(b+\left(c+2 f\sqrt{z}\right)\nu\right)^2}{4 f\nu}+e+b\sqrt{z}}\left(e^{\sqrt{z}\, c+f z}\right)^\nu \left(2 e^{\frac{\left(b+c\nu+2 f\sqrt{z}\,\nu\right)^2}{4 f\nu}}\sqrt{f\nu} - \sqrt{\pi}\,(b+c\nu)\operatorname{erfi}\left(\frac{b+c\nu+2 f\sqrt{z}\,\nu}{2\sqrt{f\nu}}\right)\right)$$

Involving $e^{b z^r+d z}\left(e^{c z^r+f z}\right)^\nu$

01.03.21.0362.01

$$\int e^{b z^2+d z}\left(e^{c z^2+f z}\right)^\nu \, dz = \frac{e^{-\frac{(d+2 b z+(f+2 c z)\nu)^2}{4(b+c\nu)}+z(d+b z)}\left(e^{z(f+c z)}\right)^\nu \sqrt{\pi}\, \operatorname{erfi}\left(\frac{d+2 b z+(f+2 c z)\nu}{2\sqrt{b+c\nu}}\right)}{2\sqrt{b+c\nu}}$$

01.03.21.0363.01

$$\int e^{\sqrt{z}\, b+d z}\left(e^{\sqrt{z}\, c+f z}\right)^\nu \, dz = \frac{1}{2(d+f\nu)^{3/2}}\left(e^{-\frac{\left(b+\left(c+2 f\sqrt{z}\right)\nu+2 d\sqrt{z}\right)^2}{4(d+f\nu)}+d z+b\sqrt{z}}\right.$$
$$\left.\left(e^{\sqrt{z}\, c+f z}\right)^\nu \left(2 e^{\frac{\left(b+c\nu+2 f\sqrt{z}\,\nu+2 d\sqrt{z}\right)^2}{4(d+f\nu)}}\sqrt{d+f\nu} - \sqrt{\pi}\,(b+c\nu)\operatorname{erfi}\left(\frac{b+c\nu+2 f\sqrt{z}\,\nu+2 d\sqrt{z}}{2\sqrt{d+f\nu}}\right)\right)\right)$$

Involving $e^{b z^r+d z+e}\left(e^{c z^r+f z}\right)^\nu$

01.03.21.0364.01

$$\int e^{b z^2+d z+e}\left(e^{c z^2+f z}\right)^\nu \, dz = \frac{e^{-\frac{(d+2 b z+(f+2 c z)\nu)^2}{4(b+c\nu)}+e+z(d+b z)}\left(e^{z(f+c z)}\right)^\nu \sqrt{\pi}\, \operatorname{erfi}\left(\frac{d+2 b z+(f+2 c z)\nu}{2\sqrt{b+c\nu}}\right)}{2\sqrt{b+c\nu}}$$

01.03.21.0365.01

$$\int e^{\sqrt{z}\, b+d z+e}\left(e^{\sqrt{z}\, c+f z}\right)^\nu \, dz = \frac{1}{2(d+f\nu)^{3/2}}\left(e^{-\frac{\left(b+\left(c+2 f\sqrt{z}\right)\nu+2 d\sqrt{z}\right)^2}{4(d+f\nu)}+e+d z+b\sqrt{z}}\right.$$
$$\left.\left(e^{\sqrt{z}\, c+f z}\right)^\nu \left(2 e^{\frac{\left(b+c\nu+2 f\sqrt{z}\,\nu+2 d\sqrt{z}\right)^2}{4(d+f\nu)}}\sqrt{d+f\nu} - \sqrt{\pi}\,(b+c\nu)\operatorname{erfi}\left(\frac{b+c\nu+2 f\sqrt{z}\,\nu+2 d\sqrt{z}}{2\sqrt{d+f\nu}}\right)\right)\right)$$

Involving $e^{d z}\left(e^{c z^r+f z+g}\right)^\nu$

01.03.21.0366.01

$$\int e^{d z}\left(e^{c z^2+f z+g}\right)^{\nu} dz = \frac{e^{d z-\frac{(d+(f+2 c z)\nu)^2}{4 c \nu}}\left(e^{g+z(f+c z)}\right)^{\nu}\sqrt{\pi}\,\operatorname{erfi}\left(\frac{d+(f+2 c z)\nu}{2\sqrt{c\nu}}\right)}{2\sqrt{c\nu}}$$

01.03.21.0367.01

$$\int e^{d z}\left(e^{\sqrt{z}\,c+g+f z}\right)^{\nu} dz = \frac{1}{2(d+f\nu)^{3/2}}\left(e^{d z-\frac{\left(2\sqrt{z}\,d+\left(c+2 f\sqrt{z}\right)\nu\right)^2}{4(d+f\nu)}}\left(e^{\sqrt{z}\,c+g+f z}\right)^{\nu}\left(2 e^{\frac{\left(2\sqrt{z}\,d+c\nu+2 f\sqrt{z}\,\nu\right)^2}{4(d+f\nu)}}\sqrt{d+f\nu}-c\sqrt{\pi}\,\nu\,\operatorname{erfi}\left(\frac{2\sqrt{z}\,d+c\nu+2 f\sqrt{z}\,\nu}{2\sqrt{d+f\nu}}\right)\right)\right)$$

Involving $e^{d z+e}\left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0368.01

$$\int e^{e+d z}\left(e^{c z^2+f z+g}\right)^{\nu} dz = \frac{e^{-\frac{(d+(f+2 c z)\nu)^2}{4 c \nu}+e+d z}\left(e^{g+z(f+c z)}\right)^{\nu}\sqrt{\pi}\,\operatorname{erfi}\left(\frac{d+(f+2 c z)\nu}{2\sqrt{c\nu}}\right)}{2\sqrt{c\nu}}$$

01.03.21.0369.01

$$\int e^{e+d z}\left(e^{\sqrt{z}\,c+g+f z}\right)^{\nu} dz = \frac{1}{2(d+f\nu)^{3/2}}\left(e^{-\frac{\left(2\sqrt{z}\,d+\left(c+2 f\sqrt{z}\right)\nu\right)^2}{4(d+f\nu)}+e+d z}\left(e^{\sqrt{z}\,c+g+f z}\right)^{\nu}\left(2 e^{\frac{\left(2\sqrt{z}\,d+c\nu+2 f\sqrt{z}\,\nu\right)^2}{4(d+f\nu)}}\sqrt{d+f\nu}-c\sqrt{\pi}\,\nu\,\operatorname{erfi}\left(\frac{2\sqrt{z}\,d+c\nu+2 f\sqrt{z}\,\nu}{2\sqrt{d+f\nu}}\right)\right)\right)$$

Involving $e^{b z^r}\left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0370.01

$$\int e^{b z^2}\left(e^{c z^2+f z+g}\right)^{\nu} dz = \frac{e^{b z^2-\frac{(2 b z+(f+2 c z)\nu)^2}{4(b+c\nu)}}\left(e^{g+z(f+c z)}\right)^{\nu}\sqrt{\pi}\,\operatorname{erfi}\left(\frac{2 b z+(f+2 c z)\nu}{2\sqrt{b+c\nu}}\right)}{2\sqrt{b+c\nu}}$$

01.03.21.0371.01

$$\int e^{b\sqrt{z}}\left(e^{\sqrt{z}\,c+g+f z}\right)^{\nu} dz = \frac{1}{2(f\nu)^{3/2}}\,e^{b\sqrt{z}-\frac{\left(b+\left(c+2 f\sqrt{z}\right)\nu\right)^2}{4 f\nu}}\left(e^{\sqrt{z}\,c+g+f z}\right)^{\nu}\left(2 e^{\frac{\left(b+c\nu+2 f\sqrt{z}\,\nu\right)^2}{4 f\nu}}\sqrt{f\nu}-\sqrt{\pi}\,(b+c\nu)\,\operatorname{erfi}\left(\frac{b+c\nu+2 f\sqrt{z}\,\nu}{2\sqrt{f\nu}}\right)\right)$$

Involving $e^{b z^r+e}\left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0372.01

$$\int e^{b z^2+e}\left(e^{c z^2+f z+g}\right)^{\nu} dz = \frac{e^{b z^2+e-\frac{(2 b z+(f+2 c z)\nu)^2}{4(b+c\nu)}}\left(e^{g+z(f+c z)}\right)^{\nu}\sqrt{\pi}\,\operatorname{erfi}\left(\frac{2 b z+(f+2 c z)\nu}{2\sqrt{b+c\nu}}\right)}{2\sqrt{b+c\nu}}$$

01.03.21.0373.01

$$\int e^{\sqrt{z}\, b+e}\left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu} dz = \frac{1}{2 (f \nu)^{3/2}} e^{-\frac{\left(b+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 f \nu}+e+b \sqrt{z}} \left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu} \left(2 e^{\frac{\left(b+c \nu+2 f \sqrt{z}\, \nu\right)^2}{4 f \nu}} \sqrt{f \nu} - \sqrt{\pi}\, (b+c \nu) \operatorname{erfi}\left(\frac{b+c \nu+2 f \sqrt{z}\, \nu}{2 \sqrt{f \nu}}\right)\right)$$

Involving $e^{b z^r+d z}\left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0374.01

$$\int e^{b z^2+d z}\left(e^{c z^2+f z+g}\right)^{\nu} dz = \frac{e^{-\frac{(d+2 b z+(f+2 c z) \nu)^2}{4 (b+c \nu)}+z (d+b z)} \left(e^{g+z (f+c z)}\right)^{\nu} \sqrt{\pi}\, \operatorname{erfi}\left(\frac{d+2 b z+(f+2 c z) \nu}{2 \sqrt{b+c \nu}}\right)}{2 \sqrt{b+c \nu}}$$

01.03.21.0375.01

$$\int e^{\sqrt{z}\, b+d z}\left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = \frac{1}{2 (d+f \nu)^{3/2}} \left(e^{-\frac{\left(b+\left(c+2 f \sqrt{z}\right) \nu+2 d \sqrt{z}\right)^2}{4 (d+f \nu)}+d z+b \sqrt{z}} \left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu} \left(2 e^{\frac{\left(b+c \nu+2 f \sqrt{z}\, \nu+2 d \sqrt{z}\right)^2}{4 (d+f \nu)}} \sqrt{d+f \nu} - \sqrt{\pi}\, (b+c \nu) \operatorname{erfi}\left(\frac{b+c \nu+2 f \sqrt{z}\, \nu+2 d \sqrt{z}}{2 \sqrt{d+f \nu}}\right)\right)\right)$$

Involving $e^{b z^r+d z+e}\left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0376.01

$$\int e^{b z^2+d z+e}\left(e^{c z^2+f z+g}\right)^{\nu} dz = \frac{e^{-\frac{(d+2 b z+(f+2 c z) \nu)^2}{4 (b+c \nu)}+e+z (d+b z)} \left(e^{g+z (f+c z)}\right)^{\nu} \sqrt{\pi}\, \operatorname{erfi}\left(\frac{d+2 b z+(f+2 c z) \nu}{2 \sqrt{b+c \nu}}\right)}{2 \sqrt{b+c \nu}}$$

01.03.21.0377.01

$$\int e^{\sqrt{z}\, b+d z+e}\left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = \frac{1}{2 (d+f \nu)^{3/2}} \left(e^{-\frac{\left(b+\left(c+2 f \sqrt{z}\right) \nu+2 d \sqrt{z}\right)^2}{4 (d+f \nu)}+e+d z+b \sqrt{z}} \left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu} \left(2 e^{\frac{\left(b+c \nu+2 f \sqrt{z}\, \nu+2 d \sqrt{z}\right)^2}{4 (d+f \nu)}} \sqrt{d+f \nu} - \sqrt{\pi}\, (b+c \nu) \operatorname{erfi}\left(\frac{b+c \nu+2 f \sqrt{z}\, \nu+2 d \sqrt{z}}{2 \sqrt{d+f \nu}}\right)\right)\right)$$

Involving product of powers of two direct functions

Involving $\left(e^{c z}\right)^{\mu}\left(e^{a z}\right)^{\nu}$

01.03.21.0378.01

$$\int \left(e^{c z}\right)^{\mu} \left(e^{a z}\right)^{\nu} dz = \frac{\left(e^{a z}\right)^{\nu} \left(e^{c z}\right)^{\mu}}{a \nu + c \mu}$$

Involving $\left(e^{c z}\right)^{\mu}\left(e^{a z+b}\right)^{\nu}$

01.03.21.0379.01

$$\int \left(e^{c z}\right)^{\mu}\left(e^{b+a z}\right)^{\nu} d z = \frac{\left(e^{b+a z}\right)^{\nu}\left(e^{c z}\right)^{\mu}}{a \nu + c \mu}$$

Involving $\left(e^{c z+d}\right)^{\mu}\left(e^{a z+b}\right)^{\nu}$

01.03.21.0380.01

$$\int \left(e^{d+c z}\right)^{\mu}\left(e^{b+a z}\right)^{\nu} d z = \frac{\left(e^{b+a z}\right)^{\nu}\left(e^{d+c z}\right)^{\mu}}{a \nu + c \mu}$$

Involving $\left(e^{b z}\right)^{\mu}\left(e^{c z^r}\right)^{\nu}$

01.03.21.0381.01

$$\int \left(e^{b z}\right)^{\mu}\left(e^{c z^2}\right)^{\nu} d z = \frac{e^{-\frac{(b \mu+2 c z \nu)^2}{4 c \nu}}\left(e^{b z}\right)^{\mu}\left(e^{c z^2}\right)^{\nu}\sqrt{\pi}\,\operatorname{erfi}\left(\frac{b \mu+2 c z \nu}{2\sqrt{c \nu}}\right)}{2\sqrt{c \nu}}$$

01.03.21.0382.01

$$\int \left(e^{b z}\right)^{\mu}\left(e^{\sqrt{z}\, c}\right)^{\nu} d z = \frac{e^{-\frac{\left(2 b \sqrt{z}\, \mu+c \nu\right)^2}{4 b \mu}}\left(e^{c\sqrt{z}}\right)^{\nu}\left(e^{b z}\right)^{\mu}\left(2 e^{\frac{\left(2 b \sqrt{z}\, \mu+c \nu\right)^2}{4 b \mu}}\sqrt{b \mu} - c\sqrt{\pi}\,\nu\,\operatorname{erfi}\left(\frac{2 b \sqrt{z}\, \mu+c \nu}{2\sqrt{b \mu}}\right)\right)}{2 (b \mu)^{3/2}}$$

Involving $\left(e^{d z+e}\right)^{\mu}\left(e^{c z^r}\right)^{\nu}$

01.03.21.0383.01

$$\int \left(e^{e+d z}\right)^{\mu}\left(e^{c z^2}\right)^{\nu} d z = \frac{e^{-\frac{(d \mu+2 c z \nu)^2}{4 c \nu}}\left(e^{c z^2}\right)^{\nu}\left(e^{e+d z}\right)^{\mu}\sqrt{\pi}\,\operatorname{erfi}\left(\frac{d \mu+2 c z \nu}{2\sqrt{c \nu}}\right)}{2\sqrt{c \nu}}$$

01.03.21.0384.01

$$\int \left(e^{e+d z}\right)^{\mu}\left(e^{\sqrt{z}\, c}\right)^{\nu} d z = \frac{e^{-\frac{\left(2 d \sqrt{z}\, \mu+c \nu\right)^2}{4 d \mu}}\left(e^{c\sqrt{z}}\right)^{\nu}\left(e^{e+d z}\right)^{\mu}\left(2 e^{\frac{\left(2 d \sqrt{z}\, \mu+c \nu\right)^2}{4 d \mu}}\sqrt{d \mu} - c\sqrt{\pi}\,\nu\,\operatorname{erfi}\left(\frac{2 d \sqrt{z}\, \mu+c \nu}{2\sqrt{d \mu}}\right)\right)}{2 (d \mu)^{3/2}}$$

Involving $\left(e^{b z^r}\right)^{\mu}\left(e^{c z^r+g}\right)^{\nu}$

01.03.21.0385.01

$$\int \left(e^{b z^r}\right)^{\mu}\left(e^{c z^r}\right)^{\nu} d z = -\frac{e^{-z^r (b \mu+c \nu)}\left(e^{b z^r}\right)^{\mu}\left(e^{c z^r}\right)^{\nu} z\left(-z^r (b \mu+c \nu)\right)^{-1/r}\,\Gamma\left(\frac{1}{r}, -z^r (b \mu+c \nu)\right)}{r}$$

01.03.21.0386.01

$$\int \left(e^{b z^2}\right)^{\mu} \left(e^{c z^2}\right)^{\nu} dz = \frac{e^{-\frac{(2 b z \mu + 2 c z \nu)^2}{4 (b \mu + c \nu)}} \left(e^{b z^2}\right)^{\mu} \left(e^{c z^2}\right)^{\nu} \sqrt{\pi}\, \mathrm{erfi}\left(\frac{2 b z \mu + 2 c z \nu}{2 \sqrt{b \mu + c \nu}}\right)}{2 \sqrt{b \mu + c \nu}}$$

01.03.21.0387.01

$$\int \left(e^{\sqrt{z}\, b}\right)^{\mu} \left(e^{\sqrt{z}\, c}\right)^{\nu} dz = \frac{2 \left(e^{\sqrt{z}\, b}\right)^{\mu} \left(e^{\sqrt{z}\, c}\right)^{\nu} \left(b \sqrt{z}\, \mu + c \sqrt{z}\, \nu - 1\right)}{(b \mu + c \nu)^2}$$

Involving $\left(e^{d z}\right)^{\mu} \left(e^{c z^r + g}\right)^{\nu}$

01.03.21.0388.01

$$\int \left(e^{d z}\right)^{\mu} \left(e^{c z^2 + g}\right)^{\nu} dz = \frac{e^{-\frac{(d \mu + 2 c z \nu)^2}{4 c \nu}} \left(e^{d z}\right)^{\mu} \left(e^{c z^2 + g}\right)^{\nu} \sqrt{\pi}\, \mathrm{erfi}\left(\frac{d \mu + 2 c z \nu}{2 \sqrt{c \nu}}\right)}{2 \sqrt{c \nu}}$$

01.03.21.0389.01

$$\int \left(e^{d z}\right)^{\mu} \left(e^{\sqrt{z}\, c + g}\right)^{\nu} dz = \frac{e^{-\frac{\left(2 d \sqrt{z}\, \mu + c \nu\right)^2}{4 d \mu}} \left(e^{\sqrt{z}\, c + g}\right)^{\nu} \left(e^{d z}\right)^{\mu} \left(2 e^{\frac{\left(2 d \sqrt{z}\, \mu + c \nu\right)^2}{4 d \mu}} \sqrt{d \mu} - c \sqrt{\pi}\, \nu\, \mathrm{erfi}\left(\frac{2 d \sqrt{z}\, \mu + c \nu}{2 \sqrt{d \mu}}\right)\right)}{2 (d \mu)^{3/2}}$$

Involving $\left(e^{d z + e}\right)^{\mu} \left(e^{c z^r + g}\right)^{\nu}$

01.03.21.0390.01

$$\int \left(e^{e + d z}\right)^{\mu} \left(e^{c z^2 + g}\right)^{\nu} dz = \frac{e^{-\frac{(d \mu + 2 c z \nu)^2}{4 c \nu}} \left(e^{e + d z}\right)^{\mu} \left(e^{c z^2 + g}\right)^{\nu} \sqrt{\pi}\, \mathrm{erfi}\left(\frac{d \mu + 2 c z \nu}{2 \sqrt{c \nu}}\right)}{2 \sqrt{c \nu}}$$

01.03.21.0391.01

$$\int \left(e^{e + d z}\right)^{\mu} \left(e^{\sqrt{z}\, c + g}\right)^{\nu} dz = \frac{e^{-\frac{\left(2 d \sqrt{z}\, \mu + c \nu\right)^2}{4 d \mu}} \left(e^{\sqrt{z}\, c + g}\right)^{\nu} \left(e^{e + d z}\right)^{\mu} \left(2 e^{\frac{\left(2 d \sqrt{z}\, \mu + c \nu\right)^2}{4 d \mu}} \sqrt{d \mu} - c \sqrt{\pi}\, \nu\, \mathrm{erfi}\left(\frac{2 d \sqrt{z}\, \mu + c \nu}{2 \sqrt{d \mu}}\right)\right)}{2 (d \mu)^{3/2}}$$

Involving $\left(e^{b z^r}\right)^{\mu} \left(e^{c z^r + g}\right)^{\nu}$

01.03.21.0392.01

$$\int \left(e^{b z^r}\right)^{\mu} \left(e^{c z^r + g}\right)^{\nu} dz = -\frac{e^{-z^r (b \mu + c \nu)} \left(e^{b z^r}\right)^{\mu} \left(e^{c z^r + g}\right)^{\nu} z \left(-z^r (b \mu + c \nu)\right)^{-1/r} \Gamma\left(\frac{1}{r}, -z^r (b \mu + c \nu)\right)}{r}$$

01.03.21.0393.01

$$\int \left(e^{b z^2}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} dz = \frac{e^{-\frac{(2 b z \mu+2 c z \nu)^2}{4 (b \mu+c \nu)}} \left(e^{b z^2}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} \sqrt{\pi}\, \operatorname{erfi}\left(\frac{2 b z \mu+2 c z \nu}{2 \sqrt{b \mu+c \nu}}\right)}{2 \sqrt{b \mu+c \nu}}$$

01.03.21.0394.01

$$\int \left(e^{\sqrt{z}\, b}\right)^{\mu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} dz = \frac{2 \left(e^{\sqrt{z}\, b}\right)^{\mu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} \left(b \sqrt{z}\, \mu + c \sqrt{z}\, \nu - 1\right)}{(b \mu + c \nu)^2}$$

Involving $\left(e^{b z^r+e}\right)^{\mu} \left(e^{c z^r+g}\right)^{\nu}$

01.03.21.0395.01

$$\int \left(e^{b z^r+e}\right)^{\mu} \left(e^{c z^r+g}\right)^{\nu} dz = -\frac{e^{-z^r (b \mu+c \nu)} \left(e^{b z^r+e}\right)^{\mu} \left(e^{c z^r+g}\right)^{\nu} z \left(-z^r (b \mu + c \nu)\right)^{-1/r} \Gamma\left(\frac{1}{r}, -z^r (b \mu + c \nu)\right)}{r}$$

01.03.21.0396.01

$$\int \left(e^{b z^2+e}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} dz = \frac{e^{-\frac{(2 b z \mu+2 c z \nu)^2}{4 (b \mu+c \nu)}} \left(e^{b z^2+e}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} \sqrt{\pi}\, \operatorname{erfi}\left(\frac{2 b z \mu+2 c z \nu}{2 \sqrt{b \mu+c \nu}}\right)}{2 \sqrt{b \mu+c \nu}}$$

01.03.21.0397.01

$$\int \left(e^{\sqrt{z}\, b+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} dz = \frac{2 \left(e^{\sqrt{z}\, b+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} \left(b \sqrt{z}\, \mu + c \sqrt{z}\, \nu - 1\right)}{(b \mu + c \nu)^2}$$

Involving $\left(e^{d z}\right)^{\mu} \left(e^{c z^r+f z}\right)^{\nu}$

01.03.21.0398.01

$$\int \left(e^{d z}\right)^{\mu} \left(e^{c z^2+f z}\right)^{\nu} dz = \frac{\sqrt{\pi}}{2 \sqrt{c \nu}} e^{-\frac{(d \mu+(f+2 c z) \nu)^2}{4 c \nu}} \left(e^{d z}\right)^{\mu} \left(e^{z (f+c z)}\right)^{\nu} \operatorname{erfi}\left(\frac{d \mu + (f + 2 c z) \nu}{2 \sqrt{c \nu}}\right)$$

01.03.21.0399.01

$$\int \left(e^{d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} dz = \frac{1}{2 (d \mu + f \nu)^{3/2}} \left(e^{-\frac{\left(2 d \sqrt{z}\, \mu+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 (d \mu+f \nu)}} \left(e^{d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} \left(2 e^{\frac{\left(2 d \sqrt{z}\, \mu+c \nu+2 f \sqrt{z}\, \nu\right)^2}{4 (d \mu+f \nu)}} \sqrt{d \mu + f \nu} - c \sqrt{\pi}\, \nu \operatorname{erfi}\left(\frac{2 d \sqrt{z}\, \mu + c \nu + 2 f \sqrt{z}\, \nu}{2 \sqrt{d \mu + f \nu}}\right)\right)\right)$$

Involving $\left(e^{d z+e}\right)^{\mu} \left(e^{c z^r+f z}\right)^{\nu}$

01.03.21.0400.01

$$\int \left(e^{d z+e}\right)^{\mu} \left(e^{c z^2+f z}\right)^{\nu} dz = \frac{\sqrt{\pi}}{2 \sqrt{c \nu}} e^{-\frac{(d \mu+(f+2 c z) \nu)^2}{4 c \nu}} \left(e^{e+d z}\right)^{\mu} \left(e^{z (f+c z)}\right)^{\nu} \operatorname{erfi}\left(\frac{d \mu + (f + 2 c z) \nu}{2 \sqrt{c \nu}}\right)$$

01.03.21.0401.01

$$\int \left(e^{d z+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} dz = \frac{1}{2 (d \mu + f \nu)^{3/2}} \left(e^{-\frac{\left(2 d \sqrt{z}\, \mu+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 (d \mu+f \nu)}} \left(e^{e+d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} \left(2 e^{\frac{\left(2 d \sqrt{z}\, \mu+c \nu+2 f \sqrt{z}\, \nu\right)^2}{4 (d \mu+f \nu)}} \sqrt{d \mu + f \nu} - c \sqrt{\pi}\, \nu\, \text{erfi}\left(\frac{2 d \sqrt{z}\, \mu + c \nu + 2 f \sqrt{z}\, \nu}{2 \sqrt{d \mu + f \nu}}\right)\right)\right)$$

Involving $\left(e^{b z^r}\right)^{\mu} \left(e^{c z^r+f z}\right)^{\nu}$

01.03.21.0402.01

$$\int \left(e^{b z^2}\right)^{\mu} \left(e^{c z^2+f z}\right)^{\nu} dz = \frac{\sqrt{\pi}}{2 \sqrt{b \mu + c \nu}}\, e^{-\frac{(2 b z \mu+(f+2 c z) \nu)^2}{4 (b \mu+c \nu)}} \left(e^{b z^2}\right)^{\mu} \left(e^{z (f+c z)}\right)^{\nu} \text{erfi}\left(\frac{2 b z \mu + (f + 2 c z) \nu}{2 \sqrt{b \mu + c \nu}}\right)$$

01.03.21.0403.01

$$\int \left(e^{\sqrt{z}\, b}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} dz = \frac{1}{2 (f \nu)^{3/2}} \left(e^{-\frac{\left(b \mu+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 f \nu}} \left(e^{\sqrt{z}\, b}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} \left(2 e^{\frac{\left(b \mu+c \nu+2 f \sqrt{z}\, \nu\right)^2}{4 f \nu}} \sqrt{f \nu} - \sqrt{\pi}\, (b \mu + c \nu)\, \text{erfi}\left(\frac{b \mu + c \nu + 2 f \sqrt{z}\, \nu}{2 \sqrt{f \nu}}\right)\right)\right)$$

Involving $\left(e^{b z^r+e}\right)^{\mu} \left(e^{c z^r+f z}\right)^{\nu}$

01.03.21.0404.01

$$\int \left(e^{b z^2+e}\right)^{\mu} \left(e^{c z^2+f z}\right)^{\nu} dz = \frac{\sqrt{\pi}}{2 \sqrt{b \mu + c \nu}}\, e^{-\frac{(2 b z \mu+(f+2 c z) \nu)^2}{4 (b \mu+c \nu)}} \left(e^{b z^2+e}\right)^{\mu} \left(e^{z (f+c z)}\right)^{\nu} \text{erfi}\left(\frac{2 b z \mu + (f + 2 c z) \nu}{2 \sqrt{b \mu + c \nu}}\right)$$

01.03.21.0405.01

$$\int \left(e^{\sqrt{z}\, b+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} dz = \frac{1}{2 (f \nu)^{3/2}} \left(e^{-\frac{\left(b \mu+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 f \nu}} \left(e^{\sqrt{z}\, b+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} \left(2 e^{\frac{\left(b \mu+c \nu+2 f \sqrt{z}\, \nu\right)^2}{4 f \nu}} \sqrt{f \nu} - \sqrt{\pi}\, (b \mu + c \nu)\, \text{erfi}\left(\frac{b \mu + c \nu + 2 f \sqrt{z}\, \nu}{2 \sqrt{f \nu}}\right)\right)\right)$$

Involving $\left(e^{b z^r+d z}\right)^{\mu} \left(e^{c z^r+f z}\right)^{\nu}$

01.03.21.0406.01

$$\int \left(e^{b z^2+d z}\right)^{\mu} \left(e^{c z^2+f z}\right)^{\nu} dz = \frac{\sqrt{\pi}}{2 \sqrt{b \mu + c \nu}}\, e^{-\frac{(d \mu+2 b z \mu+(f+2 c z) \nu)^2}{4 (b \mu+c \nu)}} \left(e^{z (d+b z)}\right)^{\mu} \left(e^{z (f+c z)}\right)^{\nu} \text{erfi}\left(\frac{d \mu + 2 b z \mu + (f + 2 c z) \nu}{2 \sqrt{b \mu + c \nu}}\right)$$

01.03.21.0407.01

$$\int \left(e^{\sqrt{z}\, b+d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} dz = \frac{1}{2 (d \mu + f \nu)^{3/2}} \left(e^{-\frac{\left(b \mu+2 d \sqrt{z}\, \mu+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 (d \mu+f \nu)}} \left(e^{\sqrt{z}\, b+d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} \left(2 e^{\frac{\left(b \mu+2 d \sqrt{z}\, \mu+c \nu+2 f \sqrt{z}\, \nu\right)^2}{4 (d \mu+f \nu)}} \sqrt{d \mu + f \nu} - \sqrt{\pi}\, (b \mu + c \nu) \operatorname{erfi}\left(\frac{b \mu + 2 d \sqrt{z}\, \mu + c \nu + 2 f \sqrt{z}\, \nu}{2 \sqrt{d \mu + f \nu}}\right)\right)\right)$$

Involving $\left(e^{d z+e}\right)^{\mu} \left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0408.01

$$\int \left(e^{d z}\right)^{\mu} \left(e^{c z^2+f z+g}\right)^{\nu} dz = \frac{\sqrt{\pi}}{2 \sqrt{c \nu}}\, e^{-\frac{(d \mu+(f+2 c z) \nu)^2}{4 c \nu}} \left(e^{d z}\right)^{\mu} \left(e^{g+z (f+c z)}\right)^{\nu} \operatorname{erfi}\left(\frac{d \mu + (f + 2 c z) \nu}{2 \sqrt{c \nu}}\right)$$

01.03.21.0409.01

$$\int \left(e^{d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = \frac{1}{2 (d \mu + f \nu)^{3/2}} \left(e^{-\frac{\left(2 d \sqrt{z}\, \mu+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 (d \mu+f \nu)}} \left(e^{d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu} \left(2 e^{\frac{\left(2 d \sqrt{z}\, \mu+c \nu+2 f \sqrt{z}\, \nu\right)^2}{4 (d \mu+f \nu)}} \sqrt{d \mu + f \nu} - c \sqrt{\pi}\, \nu \operatorname{erfi}\left(\frac{2 d \sqrt{z}\, \mu + c \nu + 2 f \sqrt{z}\, \nu}{2 \sqrt{d \mu + f \nu}}\right)\right)\right)$$

Involving $\left(e^{d z+e}\right)^{\mu} \left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0410.01

$$\int \left(e^{d z+e}\right)^{\mu} \left(e^{c z^2+f z+g}\right)^{\nu} dz = \frac{\sqrt{\pi}}{2 \sqrt{c \nu}}\, e^{-\frac{(d \mu+(f+2 c z) \nu)^2}{4 c \nu}} \left(e^{e+d z}\right)^{\mu} \left(e^{g+z (f+c z)}\right)^{\nu} \operatorname{erfi}\left(\frac{d \mu + (f + 2 c z) \nu}{2 \sqrt{c \nu}}\right)$$

01.03.21.0411.01

$$\int \left(e^{d z+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = \frac{1}{2 (d \mu + f \nu)^{3/2}} \left(e^{-\frac{\left(2 d \sqrt{z}\, \mu+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 (d \mu+f \nu)}} \left(e^{e+d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu} \left(2 e^{\frac{\left(2 d \sqrt{z}\, \mu+c \nu+2 f \sqrt{z}\, \nu\right)^2}{4 (d \mu+f \nu)}} \sqrt{d \mu + f \nu} - c \sqrt{\pi}\, \nu \operatorname{erfi}\left(\frac{2 d \sqrt{z}\, \mu + c \nu + 2 f \sqrt{z}\, \nu}{2 \sqrt{d \mu + f \nu}}\right)\right)\right)$$

Involving $\left(e^{b z^r}\right)^{\mu} \left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0412.01

$$\int \left(e^{b z^2}\right)^{\mu} \left(e^{c z^2+f z+g}\right)^{\nu} dz = \frac{\sqrt{\pi}}{2 \sqrt{b \mu + c \nu}}\, e^{-\frac{(2 b z \mu+(f+2 c z) \nu)^2}{4 (b \mu+c \nu)}} \left(e^{b z^2}\right)^{\mu} \left(e^{g+z (f+c z)}\right)^{\nu} \operatorname{erfi}\left(\frac{2 b z \mu + (f + 2 c z) \nu}{2 \sqrt{b \mu + c \nu}}\right)$$

01.03.21.0413.01

$$\int \left(e^{\sqrt{z}\, b}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = \frac{1}{2 (f \nu)^{3/2}} \left(e^{-\frac{\left(b \mu+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 f \nu}} \left(e^{\sqrt{z}\, b}\right)^{\mu} \left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu} \left(2 e^{\frac{\left(b \mu+c \nu+2 f \sqrt{z}\, \nu\right)^2}{4 f \nu}} \sqrt{f \nu} - \sqrt{\pi}\, (b \mu+c \nu) \operatorname{erfi}\left(\frac{b \mu+c \nu+2 f \sqrt{z}\, \nu}{2 \sqrt{f \nu}}\right)\right)\right)$$

Involving $\left(e^{b z^r+e}\right)^{\mu} \left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0414.01

$$\int \left(e^{b z^2+e}\right)^{\mu} \left(e^{c z^2+f z+g}\right)^{\nu} dz = \frac{\sqrt{\pi}}{2 \sqrt{b \mu+c \nu}}\, e^{-\frac{(2 b z \mu+(f+2 c z) \nu)^2}{4 (b \mu+c \nu)}} \left(e^{b z^2+e}\right)^{\mu} \left(e^{g+z (f+c z)}\right)^{\nu} \operatorname{erfi}\left(\frac{2 b z \mu+(f+2 c z) \nu}{2 \sqrt{b \mu+c \nu}}\right)$$

01.03.21.0415.01

$$\int \left(e^{\sqrt{z}\, b+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = \frac{1}{2 (f \nu)^{3/2}} \left(e^{-\frac{\left(b \mu+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 f \nu}} \left(e^{\sqrt{z}\, b+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu} \left(2 e^{\frac{\left(b \mu+c \nu+2 f \sqrt{z}\, \nu\right)^2}{4 f \nu}} \sqrt{f \nu} - \sqrt{\pi}\, (b \mu+c \nu) \operatorname{erfi}\left(\frac{b \mu+c \nu+2 f \sqrt{z}\, \nu}{2 \sqrt{f \nu}}\right)\right)\right)$$

Involving $\left(e^{b z^r+d z}\right)^{\mu} \left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0416.01

$$\int \left(e^{b z^2+d z}\right)^{\mu} \left(e^{c z^2+f z+g}\right)^{\nu} dz = \frac{\sqrt{\pi}}{2 \sqrt{b \mu+c \nu}}\, e^{-\frac{(d \mu+2 b z \mu+(f+2 c z) \nu)^2}{4 (b \mu+c \nu)}} \left(e^{z (d+b z)}\right)^{\mu} \left(e^{g+z (f+c z)}\right)^{\nu} \operatorname{erfi}\left(\frac{d \mu+2 b z \mu+(f+2 c z) \nu}{2 \sqrt{b \mu+c \nu}}\right)$$

01.03.21.0417.01

$$\int \left(e^{\sqrt{z}\, b+d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = \frac{1}{2 (d \mu+f \nu)^{3/2}} \left(e^{-\frac{\left(b \mu+2 d \sqrt{z}\, \mu+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 (d \mu+f \nu)}} \left(e^{\sqrt{z}\, b+d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu} \left(2 e^{\frac{\left(b \mu+2 d \sqrt{z}\, \mu+c \nu+2 f \sqrt{z}\, \nu\right)^2}{4 (d \mu+f \nu)}} \sqrt{d \mu+f \nu} - \sqrt{\pi}\, (b \mu+c \nu) \operatorname{erfi}\left(\frac{b \mu+2 d \sqrt{z}\, \mu+c \nu+2 f \sqrt{z}\, \nu}{2 \sqrt{d \mu+f \nu}}\right)\right)\right)$$

Involving $\left(e^{b z^r+d z+e}\right)^{\mu} \left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0418.01

$$\int \left(e^{b z^2+d z+e}\right)^{\mu} \left(e^{c z^2+f z+g}\right)^{\nu} dz = \frac{\sqrt{\pi}}{2 \sqrt{b \mu+c \nu}}\, e^{-\frac{(d \mu+2 b z \mu+(f+2 c z) \nu)^2}{4 (b \mu+c \nu)}} \left(e^{e+z (d+b z)}\right)^{\mu} \left(e^{g+z (f+c z)}\right)^{\nu} \operatorname{erfi}\left(\frac{d \mu+2 b z \mu+(f+2 c z) \nu}{2 \sqrt{b \mu+c \nu}}\right)$$

01.03.21.0419.01

$$\int \left(e^{\sqrt{z}\, b+d z+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = \frac{1}{2 (d \mu + f \nu)^{3/2}} \left(e^{-\frac{\left(b \mu+2 d \sqrt{z}\, \mu+\left(c+2 f \sqrt{z}\right) \nu\right)^2}{4 (d \mu+f \nu)}} \left(e^{\sqrt{z}\, b+e+d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu} \left(2\, e^{\frac{\left(b \mu+2 d \sqrt{z}\, \mu+c \nu+2 f \sqrt{z}\, \nu\right)^2}{4 (d \mu+f \nu)}} \sqrt{d \mu + f \nu} - \sqrt{\pi}\, (b \mu + c \nu) \operatorname{erfi}\left(\frac{b \mu + 2 d \sqrt{z}\, \mu + c \nu + 2 f \sqrt{z}\, \nu}{2 \sqrt{d \mu + f \nu}} \right) \right) \right)$$

Involving rational functions of the direct function

Involving $\frac{1}{a+b\, e^{c z}}$

01.03.21.0420.01

$$\int \frac{1}{a + b\, e^{c z}}\, dz = \frac{z}{a} - \frac{\log(a + b\, e^{c z})}{a c}$$

01.03.21.0421.01

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

01.03.21.0422.01

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

Involving $(a + b\, e^{c z})^{-n}$

01.03.21.0423.01

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

01.03.21.0424.01

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

01.03.21.0425.01

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

01.03.21.0426.01

$$\int \frac{1}{(a + b\, e^{c z})^3}\, dz = \frac{1}{2 a^3} \left(\frac{a^2}{c\, (a + b\, e^{c z})^2} + \frac{2 a}{b\, e^{c z}\, c + a c} + 2 z - \frac{2 \log(a + b\, e^{c z})}{c} \right)$$

01.03.21.0427.01

$$\int \frac{1}{(a + b\, e^{c z})^4}\, dz = \frac{1}{6 a^4} \left(\frac{2 a^3}{c\, (a + b\, e^{c z})^3} + \frac{3 a^2}{c\, (a + b\, e^{c z})^2} + \frac{6 a}{b\, e^{c z}\, c + a c} + 6 z - \frac{6 \log(a + b\, e^{c z})}{c} \right)$$

Involving $\frac{e^{d z}}{a+b\, e^{c z}}$

01.03.21.0428.01

$$\int \frac{e^{dz}}{a+b\,e^{cz}}\,dz = \frac{e^{dz}}{a\,d}\,{}_2F_1\left(1,\frac{d}{c};\frac{c+d}{c};-\frac{b\,e^{cz}}{a}\right)$$

01.03.21.0429.01

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

01.03.21.0430.01

$$\int \frac{e^{cz}}{a+b\,e^{cz}}\,dz = \frac{\log(a+b\,e^{cz})}{b\,c}$$

01.03.21.0431.01

$$\int \frac{A+B\,e^{cz}}{a+b\,e^{cz}}\,dz = \frac{A\,b\,c\,z+(a\,B-A\,b)\log(a+b\,e^{cz})}{a\,b\,c}$$

01.03.21.0432.01

$$\int \frac{e^{2cz}}{a+b\,e^{cz}}\,dz = \frac{b\,e^{cz}-a\log(a+b\,e^{cz})}{b^2\,c}$$

01.03.21.0433.01

$$\int \frac{e^{cz}}{a+b\,e^{2cz}}\,dz = \frac{\tan^{-1}\left(\frac{\sqrt{b}\,e^{cz}}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{b}\,c}$$

01.03.21.0434.01

$$\int \frac{e^{cz}}{a+b\,e^{3cz}}\,dz = -\frac{1}{6\,a^{2/3}\sqrt[3]{b}\,c}\left(2\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\,e^{cz}}{\sqrt[3]{a}}}{\sqrt{3}}\right)-2\log\left(\sqrt[3]{a}+\sqrt[3]{b}\,e^{cz}\right)+\log\left(-\sqrt[3]{a}\,e^{cz}\sqrt[3]{b}+e^{2cz}\,b^{2/3}+a^{2/3}\right)\right)$$

Involving $e^{fz}(a+b\,c^{dz})^{-n}$

01.03.21.0435.01

$$\int \frac{e^{fz}}{\left(a+b\,c^{dz}\right)^2}\,dz = \frac{e^{fz}}{a^2\left(b\,c^{dz}+a\right)d\,f\log(c)\log(e)}\left(a\,f\log(e)+\left(b\,c^{dz}+a\right){}_2F_1\left(1,\frac{f\log(e)}{d\log(c)};\frac{f\log(e)}{d\log(c)}+1;-\frac{b\,c^{dz}}{a}\right)(d\log(c)-f\log(e))\right)$$

01.03.21.0436.01

$$\int \frac{e^{dz}}{(a+b\,e^{cz})^2}\,dz = \frac{e^{dz}}{a^2\,c\,d\,(a+b\,e^{cz})}\left(a\,d+(c-d)\,(a+b\,e^{cz})\,{}_2F_1\left(1,\frac{d}{c};\frac{c+d}{c};-\frac{b\,e^{cz}}{a}\right)\right)$$

01.03.21.0437.01

$$\int \frac{A+B\,e^{cz}}{(a+b\,e^{cz})^2}\,dz = \frac{1}{a^2}\left(\frac{a\,A\,b-a^2\,B}{c\,e^{cz}\,b^2+a\,c\,b}+A\,z-\frac{A\log(a+b\,e^{cz})}{c}\right)$$

01.03.21.0438.01

$$\int \frac{A+B\,e^{c\,z}}{(a+b\,e^{c\,z})^3}\,dz = \frac{1}{2\,a^3}\left(\frac{(A\,b-a\,B)\,a^2}{b\,c\,(a+b\,e^{c\,z})^2}+\frac{2\,A\,a}{b\,e^{c\,z}\,c+a\,c}+2\,A\,z-\frac{2\,A\log(a+b\,e^{c\,z})}{c}\right)$$

01.03.21.0439.01

$$\int \frac{A+B\,e^{c\,z}+C\,e^{2\,c\,z}}{(a+b\,e^{c\,z})^3}\,dz = \frac{1}{2\,a^3}\left(\frac{\left(A\,b^2+a\,(a\,C-b\,B)\right)a^2}{b^2\,c\,(a+b\,e^{c\,z})^2}+2\,A\,z-\frac{2\,A\log(a+b\,e^{c\,z})}{c}+\frac{2\,a\,A\,b^2-2\,a^3\,C}{c\,e^{c\,z}\,b^3+a\,c\,b^2}\right)$$

Involving $\frac{1}{a\,e^{2\,d\,z}+b\,e^{d\,z}+c}$

01.03.21.0440.01

$$\int \frac{1}{e^{2\,d\,z}\,a+b\,e^{d\,z}+c}\,dz = \frac{1}{2\,c}\left(2\,z-\frac{2\,b}{\sqrt{4\,a\,c-b^2}\;d}\tan^{-1}\!\left(\frac{2\,e^{d\,z}\,a+b}{\sqrt{4\,a\,c-b^2}}\right)-\frac{\log\left(e^{2\,d\,z}\,a+b\,e^{d\,z}+c\right)}{d}\right)$$

Involving $\frac{e^{e\,z}}{a\,e^{2\,d\,z}+b\,e^{d\,z}+c}$

01.03.21.0441.01

$$\int \frac{e^{e\,z}}{e^{2\,d\,z}\,a+b\,e^{d\,z}+c}\,dz = \frac{e^{e\,z}}{2\,c\,\sqrt{b^2-4\,a\,c}\;e}$$

$$\left(\left(b+\sqrt{b^2-4\,a\,c}\right){}_2F_1\!\left(\frac{e}{d},1;\frac{d+e}{d};\frac{2\,a\,e^{d\,z}}{\sqrt{b^2-4\,a\,c}-b}\right)+\left(\sqrt{b^2-4\,a\,c}-b\right){}_2F_1\!\left(\frac{e}{d},1;\frac{d+e}{d};-\frac{2\,a\,e^{d\,z}}{b+\sqrt{b^2-4\,a\,c}}\right)\right)$$

01.03.21.0442.01

$$\int \frac{e^{2\,d\,z}}{e^{2\,d\,z}\,a+b\,e^{d\,z}+c}\,dz = \frac{\log\left(e^{2\,d\,z}\,a+b\,e^{d\,z}+c\right)}{2\,a\,d}-\frac{b}{a\,\sqrt{4\,a\,c-b^2}\;d}\tan^{-1}\!\left(\frac{2\,e^{d\,z}\,a+b}{\sqrt{4\,a\,c-b^2}}\right)$$

Other integrals

01.03.21.0443.01

$$\int \frac{6^z}{4^z\,a+9^z\,b}\,dz = \frac{b\log\left(\frac{3^z\sqrt{-b}-2^z\sqrt{a}}{2^z\sqrt{a}+3^z\sqrt{-b}}\right)}{\sqrt{a}\;(-b)^{3/2}\log\left(\frac{9}{4}\right)}$$

01.03.21.0444.01

$$\int \frac{e^z+e^{5\,z}}{-1+e^z-e^{2\,z}+e^{3\,z}}\,dz = \frac{1}{2}\left((-1-i)\tan^{-1}\!\left(\frac{-1+e^z}{1+e^z}\right)+2\,e^z+e^{2\,z}+(1-i)\tan^{-1}\!\left(\frac{1+e^z}{-1+e^z}\right)+2\log(-1+e^z)-\log\left(1+e^{2\,z}\right)\right)$$

01.03.21.0445.01

$$\int \frac{1}{1+e^{z/6}+e^{z/3}+e^{z/2}}\,dz = \frac{1}{2}\left(2\,z+(3-3\,i)\tan^{-1}\!\left(\frac{1+e^{z/6}}{-1+e^{z/6}}\right)-(3+3\,i)\tan^{-1}\!\left(\frac{-1+e^{z/6}}{1+e^{z/6}}\right)-3\log\left(1+e^{z/3}\right)-6\log\left(1+e^{z/6}\right)\right)$$

Involving algebraic functions of the direct function

Involving $\left(a + b\, c^{d z}\right)^{\beta}$

01.03.21.0446.01

$$\int \left(a + b\, c^{d z}\right)^{\beta} dz = \frac{1}{d\, \beta \log(c)} \left(\frac{a\, c^{-d z}}{b} + 1\right)^{-\beta} \left(b\, c^{d z} + a\right)^{\beta} {}_2F_1\left(-\beta, -\beta; 1 - \beta; -\frac{a\, c^{-d z}}{b}\right)$$

01.03.21.0447.01

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

01.03.21.0448.01

$$\int (a + b\, e^{c z})^{\beta} dz = \frac{1}{c\, \beta} \left(\frac{e^{-c z} a}{b} + 1\right)^{-\beta} (a + b\, e^{c z})^{\beta} {}_2F_1\left(-\beta, -\beta; 1 - \beta; -\frac{a\, e^{-c z}}{b}\right)$$

01.03.21.0449.01

$$\int (a + a\, e^{c z})^{\beta} dz = \frac{1}{c\, \beta} (1 + e^{-c z})^{-\beta} (a\, (1 + e^{c z}))^{\beta} {}_2F_1(-\beta, -\beta; 1 - \beta; -e^{-c z})$$

01.03.21.0450.01

$$\int (a - a\, e^{c z})^{\beta} dz = \frac{1}{c\, \beta} (1 - e^{-c z})^{-\beta} (a - a\, e^{c z})^{\beta} {}_2F_1(-\beta, -\beta; 1 - \beta; e^{-c z})$$

01.03.21.0451.01

$$\int (a + b\, e^{c z})^{5/2} dz = \frac{1}{15\, c} \left(2 \sqrt{a + b\, e^{c z}} \left(23\, a^2 + 11\, b\, e^{c z}\, a + 3\, b^2\, e^{2 c z}\right) - 30\, a^{5/2} \tanh^{-1}\left(\frac{\sqrt{a + b\, e^{c z}}}{\sqrt{a}}\right)\right)$$

01.03.21.0452.01

$$\int (a + b\, e^{c z})^{3/2} dz = \frac{1}{3\, c} \left(2 \sqrt{a + b\, e^{c z}}\, (4\, a + b\, e^{c z}) - 6\, a^{3/2} \tanh^{-1}\left(\frac{\sqrt{a + b\, e^{c z}}}{\sqrt{a}}\right)\right)$$

01.03.21.0453.01

$$\int \sqrt{a + b\, e^{c z}}\, dz = \frac{2}{c} \left(\sqrt{a + b\, e^{c z}} - \sqrt{a} \tanh^{-1}\left(\frac{\sqrt{a + b\, e^{c z}}}{\sqrt{a}}\right)\right)$$

01.03.21.0454.01

$$\int \sqrt{e^{c z}\, a + a}\, dz = \frac{2 \sqrt{a\, (1 + e^{c z})} \left(\sqrt{1 + e^{c z}} - \tanh^{-1}\left(\sqrt{1 + e^{c z}}\right)\right)}{c \sqrt{1 + e^{c z}}}$$

01.03.21.0455.01

$$\int \sqrt{a - a\, e^{c z}}\, dz = \frac{2}{c} \left(\sqrt{a - a\, e^{c z}} - \sqrt{a} \tanh^{-1}\left(\frac{\sqrt{a - a\, e^{c z}}}{\sqrt{a}}\right)\right)$$

01.03.21.0456.01

$$\int \frac{1}{\sqrt{a + b\, e^{c z}}}\, dz = -\frac{2}{\sqrt{a}\, c} \tanh^{-1}\left(\frac{\sqrt{a + b\, e^{c z}}}{\sqrt{a}}\right)$$

01.03.21.0457.01

$$\int \frac{1}{\sqrt{e^{cz}a+a}}\,dz = -\frac{2\sqrt{1+e^{cz}}\,\tanh^{-1}\left(\sqrt{1+e^{cz}}\right)}{c\sqrt{a(1+e^{cz})}}$$

01.03.21.0458.01

$$\int \frac{1}{\sqrt{a-a\,e^{cz}}}\,dz = -\frac{2}{\sqrt{a}\,c}\tanh^{-1}\left(\frac{\sqrt{a-a\,e^{cz}}}{\sqrt{a}}\right)$$

01.03.21.0459.01

$$\int \frac{1}{(a+b\,e^{cz})^{3/2}}\,dz = \frac{1}{c}\left(\frac{2}{a\sqrt{a+b\,e^{cz}}} - \frac{2}{a^{3/2}}\tanh^{-1}\left(\frac{\sqrt{a+b\,e^{cz}}}{\sqrt{a}}\right)\right)$$

01.03.21.0460.01

$$\int \frac{1}{(e^{cz}a+a)^{3/2}}\,dz = \frac{2-2\sqrt{1+e^{cz}}\,\tanh^{-1}\left(\sqrt{1+e^{cz}}\right)}{a\,c\sqrt{a(1+e^{cz})}}$$

01.03.21.0461.01

$$\int \frac{1}{(a-a\,e^{cz})^{3/2}}\,dz = -\frac{1}{a^2c}\left(2\sqrt{a}\,\tanh^{-1}\left(\frac{\sqrt{a-a\,e^{cz}}}{\sqrt{a}}\right) + \frac{2\sqrt{a-a\,e^{cz}}}{-1+e^{cz}}\right)$$

01.03.21.0462.01

$$\int \frac{1}{(a+b\,e^{cz})^{5/2}}\,dz = \frac{1}{3a^{5/2}c\,(a+b\,e^{cz})^2}\left(2\sqrt{a}\sqrt{a+b\,e^{cz}}\,(4a+3b\,e^{cz}) - 6(a+b\,e^{cz})^2\tanh^{-1}\left(\frac{\sqrt{a+b\,e^{cz}}}{\sqrt{a}}\right)\right)$$

Involving $((a+b\,e^{cz})^{\nu})^{\beta}$

01.03.21.0463.01

$$\int ((a+b\,e^{cz})^{\nu})^{\beta}\,dz = \frac{1}{c\,\beta\,\nu}\left(\frac{e^{-cz}a}{b}+1\right)^{-\beta\nu}((a+b\,e^{cz})^{\nu})^{\beta}\,{}_2F_1\left(-\beta\nu,-\beta\nu;1-\beta\nu;-\frac{a\,e^{-cz}}{b}\right)$$

01.03.21.0464.01

$$\int \sqrt{(a+b\,e^{cz})^5}\,dz = \frac{2\sqrt{(a+b\,e^{cz})^5}}{15c\,(a+b\,e^{cz})^{5/2}}\left(\sqrt{a+b\,e^{cz}}\,\left(23a^2+11b\,e^{cz}a+3b^2e^{2cz}\right) - 15a^{5/2}\tanh^{-1}\left(\frac{\sqrt{a+b\,e^{cz}}}{\sqrt{a}}\right)\right)$$

01.03.21.0465.01

$$\int \sqrt{(a+b\,e^{cz})^3}\,dz = \frac{2\sqrt{(a+b\,e^{cz})^3}}{3c\,(a+b\,e^{cz})^{3/2}}\left(\sqrt{a+b\,e^{cz}}\,(4a+b\,e^{cz}) - 3a^{3/2}\tanh^{-1}\left(\frac{\sqrt{a+b\,e^{cz}}}{\sqrt{a}}\right)\right)$$

01.03.21.0466.01

$$\int \frac{1}{\sqrt{(a+b\,e^{cz})^3}}\,dz = \frac{(2(a+b\,e^{cz}))}{a^{3/2}c\sqrt{(a+b\,e^{cz})^3}}\left(\sqrt{a} - \sqrt{a+b\,e^{cz}}\,\tanh^{-1}\left(\frac{\sqrt{a+b\,e^{cz}}}{\sqrt{a}}\right)\right)$$

01.03.21.0467.01

$$\int \frac{1}{\sqrt{(a+b\,e^{cz})^5}}\,dz = \frac{2(a+b\,e^{cz})}{3a^{5/2}c\sqrt{(a+b\,e^{cz})^5}}\left(\sqrt{a}\,(4a+3b\,e^{cz}) - 3(a+b\,e^{cz})^{3/2}\tanh^{-1}\left(\frac{\sqrt{a+b\,e^{cz}}}{\sqrt{a}}\right)\right)$$

Involving $\left(a+b\,c^{d z}\right)^{\beta} e^{f z}$

01.03.21.0468.01

$$\int \left(a+b\,c^{d z}\right)^{\beta} e^{f z}\, dz = \frac{\left(b\,c^{d z}+a\right)^{\beta}}{f \log(e)} \left(\frac{b\,c^{d z}}{a}+1\right)^{-\beta} e^{f z}\, {}_2F_1\!\left(-\beta, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)}+1; -\frac{b\,c^{d z}}{a}\right)$$

01.03.21.0469.01

$$\int (a+b\,e^{c z})^{\beta} e^{d z}\, dz = \frac{e^{d z}}{d} (a+b\,e^{c z})^{\beta} \left(\frac{e^{c z}\, b}{a}+1\right)^{-\beta} {}_2F_1\!\left(\frac{d}{c}, -\beta; \frac{c+d}{c}; -\frac{b\,e^{c z}}{a}\right)$$

01.03.21.0470.01

$$\int (a+b\,e^{c z})^{\beta} e^{c z}\, dz = \frac{(a+b\,e^{c z})^{\beta+1}}{b\,c\,(\beta+1)}$$

01.03.21.0471.01

$$\int (e^{c z}\, a+a)^{\beta} e^{c z}\, dz = \frac{(a\,(1+e^{c z}))^{\beta+1}}{a\,c\,(\beta+1)}$$

01.03.21.0472.01

$$\int (a-a\,e^{c z})^{\beta} e^{c z}\, dz = -\frac{(a-a\,e^{c z})^{\beta+1}}{a\,c\,(\beta+1)}$$

01.03.21.0473.01

$$\int \sqrt{a+b\,e^{c z}}\; e^{c z}\, dz = \frac{2\,(a+b\,e^{c z})^{3/2}}{3\,b\,c}$$

01.03.21.0474.01

$$\int \sqrt{e^{c z}\, a+a}\; e^{c z}\, dz = \frac{2\,(a\,(1+e^{c z}))^{3/2}}{3\,a\,c}$$

01.03.21.0475.01

$$\int \sqrt{a-a\,e^{c z}}\; e^{c z}\, dz = -\frac{2\,(a\,(1-e^{c z}))^{3/2}}{3\,a\,c}$$

01.03.21.0476.01

$$\int \frac{e^{c z}}{\sqrt{a+b\,e^{c z}}}\, dz = \frac{2\,\sqrt{a+b\,e^{c z}}}{b\,c}$$

01.03.21.0477.01

$$\int \frac{e^{c z}}{\sqrt{e^{c z}\, a+a}}\, dz = \frac{2\,\sqrt{a\,(1+e^{c z})}}{a\,c}$$

01.03.21.0478.01

$$\int \frac{e^{c z}}{\sqrt{a-a\,e^{c z}}}\, dz = -\frac{2\,\sqrt{a-a\,e^{c z}}}{a\,c}$$

01.03.21.0479.01

$$\int \frac{e^{c z}}{(a+b\,e^{c z})^{3/2}}\, dz = -\frac{2}{b\,c\,\sqrt{a+b\,e^{c z}}}$$

01.03.21.0480.01

$$\int \frac{e^{c z}}{(a + b\, e^{c z})^{5/2}}\, dz = -\frac{2}{3\, b\, c\, (a + b\, e^{c z})^{3/2}}$$

Involving $((a + b\, e^{c z})^{\nu})^{\beta}\, e^{d z}$

01.03.21.0481.01

$$\int ((a + b\, e^{c z})^{\nu})^{\beta}\, e^{d z}\, dz = \frac{e^{d z}}{d} ((a + b\, e^{c z})^{\nu})^{\beta} \left(\frac{e^{c z}\, b}{a} + 1\right)^{-\beta \nu} {}_2F_1\!\left(\frac{d}{c}, -\beta \nu; \frac{c + d}{c}; -\frac{b\, e^{c z}}{a}\right)$$

01.03.21.0482.01

$$\int \sqrt{(a + b\, e^{c z})^5}\, e^{c z}\, dz = \frac{2\, (a + b\, e^{c z}) \sqrt{(a + b\, e^{c z})^5}}{7\, b\, c}$$

01.03.21.0483.01

$$\int \sqrt{(a + b\, e^{c z})^3}\, e^{c z}\, dz = \frac{2\, (a + b\, e^{c z}) \sqrt{(a + b\, e^{c z})^3}}{5\, b\, c}$$

01.03.21.0484.01

$$\int \frac{e^{c z}}{\sqrt{(a + b\, e^{c z})^3}}\, dz = -\frac{2\, (a + b\, e^{c z})}{b\, c \sqrt{(a + b\, e^{c z})^3}}$$

01.03.21.0485.01

$$\int \frac{e^{c z}}{\sqrt{(e^{c z}\, a + a)^3}}\, dz = -\frac{2\, (1 + e^{c z})}{c \sqrt{(e^{c z}\, a + a)^3}}$$

01.03.21.0486.01

$$\int \frac{e^{c z}}{\sqrt{(a - a\, e^{c z})^3}}\, dz = -\frac{2\, (-1 + e^{c z})}{c \sqrt{(a - a\, e^{c z})^3}}$$

01.03.21.0487.01

$$\int \frac{e^{c z}}{\sqrt{(a + b\, e^{c z})^5}}\, dz = -\frac{2\, (a + b\, e^{c z})}{3\, b\, c \sqrt{(a + b\, e^{c z})^5}}$$

Involving $(a + b\, e^{c z})^{\beta} \left(e^{d z}\right)^{\nu}$

01.03.21.0488.01

$$\int (a + b\, e^{c z})^{\beta} \left(e^{d z}\right)^{\nu} dz = \frac{1}{d\, \nu} \left(e^{d z}\right)^{\nu} (a + b\, e^{c z})^{\beta} \left(\frac{e^{c z}\, b}{a} + 1\right)^{-\beta} {}_2F_1\!\left(-\beta, \frac{d\, \nu}{c}; \frac{d\, \nu}{c} + 1; -\frac{b\, e^{c z}}{a}\right)$$

01.03.21.0489.01

$$\int (a + b\, e^{c z})^{\beta} (e^{c z})^{\nu}\, dz = \frac{1}{c\, \nu} (e^{c z})^{\nu} (a + b\, e^{c z})^{\beta} \left(\frac{e^{c z}\, b}{a} + 1\right)^{-\beta} {}_2F_1\!\left(-\beta, \nu; \nu + 1; -\frac{b\, e^{c z}}{a}\right)$$

01.03.21.0490.01

$$\int \frac{\sqrt{e^{cz}}}{a+b\,e^{cz}}\,dz = \frac{2\,e^{-\frac{cz}{2}}\sqrt{e^{cz}}}{\sqrt{a}\,\sqrt{b}\,c}\tan^{-1}\left(\frac{\sqrt{b}\,e^{\frac{cz}{2}}}{\sqrt{a}}\right)$$

Involving $(a+b\,e^{cz})^{\beta}$ and rational function of e^{cz}

01.03.21.0491.01

$$\int \frac{e^{pz}(a+b\,e^{cz})^{\beta}}{d+e\,e^{cz}}\,dz = \frac{e^{pz}}{(d+e\,e^{cz})\,p}(a+b\,e^{cz})^{\beta}\left(\frac{e^{cz}\,b}{a}+1\right)^{-\beta}\left(\frac{e^{cz}\,e}{d}+1\right)F_1\left(\frac{p}{c};-\beta,1;\frac{p}{c}+1;-\frac{b\,e^{cz}}{a},-\frac{e\,e^{cz}}{d}\right)$$

01.03.21.0492.01

$$\int \frac{(a+b\,e^{cz})^{\beta}}{d+e\,e^{cz}}\,dz = \frac{(a+b\,e^{cz})^{\beta+1}}{a\,c\,d\,(a\,e-b\,d)(\beta+1)}\left((b\,d-a\,e)\,{}_2F_1\left(\beta+1,1;\beta+2;\frac{e^{cz}\,b}{a}+1\right)+a\,e\,{}_2F_1\left(\beta+1,1;\beta+2;\frac{e\,(a+b\,e^{cz})}{a\,e-b\,d}\right)\right)$$

01.03.21.0493.01

$$\int \frac{\sqrt{a+b\,e^{cz}}}{d+e\,e^{cz}}\,dz = \frac{1}{c\,d}\left(\frac{2\sqrt{a\,e-b\,d}}{\sqrt{e}}\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{a+b\,e^{cz}}}{\sqrt{a\,e-b\,d}}\right)-2\sqrt{a}\,\tanh^{-1}\left(\frac{\sqrt{a+b\,e^{cz}}}{\sqrt{a}}\right)\right)$$

01.03.21.0494.01

$$\int \frac{1}{(d+e\,e^{cz})\sqrt{a+b\,e^{cz}}}\,dz = \frac{1}{c\,d}\left(\frac{2\sqrt{e}}{\sqrt{a\,e-b\,d}}\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{a+b\,e^{cz}}}{\sqrt{a\,e-b\,d}}\right)-\frac{2}{\sqrt{a}}\tanh^{-1}\left(\frac{\sqrt{a+b\,e^{cz}}}{\sqrt{a}}\right)\right)$$

01.03.21.0495.01

$$\int \frac{e^{cz}}{(d+e\,e^{cz})\sqrt{a+b\,e^{cz}}}\,dz = -\frac{2}{c\sqrt{e}\,\sqrt{a\,e-b\,d}}\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{a+b\,e^{cz}}}{\sqrt{a\,e-b\,d}}\right)$$

01.03.21.0496.01

$$\int \frac{e^{dz}(a+b\,e^{cz})^{\beta}}{d+e\,e^{cz}}\,dz = \frac{c\,e^{dz}(a+b\,e^{cz})^{\beta}}{c\,d^2}\left(\frac{e^{cz}\,b}{a}+1\right)^{-\beta}F_1\left(\frac{d}{c};-\beta,1;\frac{c+d}{c};-\frac{b\,e^{cz}}{a},-\frac{e\,e^{cz}}{d}\right)$$

Involving $\left(a+b\,e^{2cz}\right)^{\beta}e^{cz}$

01.03.21.0497.01

$$\int \left(a+b\,e^{2cz}\right)^{5/2}e^{cz}\,dz =$$

$$\frac{1}{48\sqrt{b}\,c}\left(15\log\left(2\left(e^{cz}\sqrt{b}+\sqrt{a+b\,e^{2cz}}\right)\right)a^3+\sqrt{b}\,e^{cz}\sqrt{a+b\,e^{2cz}}\left(33\,a^2+26\,b\,e^{2cz}\,a+8\,b^2\,e^{4cz}\right)\right)$$

01.03.21.0498.01

$$\int \left(a+b\,e^{2cz}\right)^{3/2}e^{cz}\,dz = \frac{3\log\left(2\left(e^{cz}\sqrt{b}+\sqrt{a+b\,e^{2cz}}\right)\right)a^2+\sqrt{b}\,e^{cz}\sqrt{a+b\,e^{2cz}}\left(5\,a+2\,b\,e^{2cz}\right)}{8\sqrt{b}\,c}$$

01.03.21.0499.01

$$\int \sqrt{a+b\,e^{2cz}}\,e^{cz}\,dz = \frac{a\log\left(2\left(e^{cz}\sqrt{b}+\sqrt{a+b\,e^{2cz}}\right)\right)+\sqrt{b}\,e^{cz}\sqrt{a+b\,e^{2cz}}}{2\sqrt{b}\,c}$$

01.03.21.0500.01

$$\int \frac{e^{cz}}{\sqrt{a+b\,e^{2cz}}}\,dz = \frac{\log\left(2\left(e^{cz}\sqrt{b}+\sqrt{a+b\,e^{2cz}}\right)\right)}{\sqrt{b}\;c}$$

01.03.21.0501.01

$$\int \frac{e^{cz}}{\left(a+b\,e^{2cz}\right)^{3/2}}\,dz = \frac{e^{cz}}{a\,c\sqrt{a+b\,e^{2cz}}}$$

01.03.21.0502.01

$$\int \frac{e^{cz}}{\left(a+b\,e^{2cz}\right)^{5/2}}\,dz = \frac{e^{cz}\left(3\,a+2\,b\,e^{2cz}\right)}{3\,a^2\,c\left(a+b\,e^{2cz}\right)^{3/2}}$$

Involving $\left(\left(a+b\,e^{2cz}\right)^{\nu}\right)^{\beta}\,e^{cz}$

01.03.21.0503.01

$$\int \left(\left(a+b\,e^{2cz}\right)^{\nu}\right)^{\beta} e^{cz}\,dz = \frac{e^{cz}}{c}\left(\left(a+b\,e^{2cz}\right)^{\nu}\right)^{\beta}\left(\frac{e^{2cz}\,b}{a}+1\right)^{-\beta\nu}{}_2F_1\!\left(\frac{1}{2},-\beta\,\nu;\frac{3}{2};-\frac{b\,e^{2cz}}{a}\right)$$

01.03.21.0504.01

$$\int \sqrt{\left(a+b\,e^{2cz}\right)^5}\,e^{cz}\,dz = \left(\sqrt{\left(a+b\,e^{2cz}\right)^5}\left(15\log\left(2\left(e^{cz}\sqrt{b}+\sqrt{a+b\,e^{2cz}}\right)\right)a^3+\sqrt{b}\;e^{cz}\sqrt{a+b\,e^{2cz}}\left(33\,a^2+26\,b\,e^{2cz}\,a+8\,b^2\,e^{4cz}\right)\right)\right)\Big/ \left(48\sqrt{b}\;c\left(a+b\,e^{2cz}\right)^{5/2}\right)$$

01.03.21.0505.01

$$\int \sqrt{\left(a+b\,e^{2cz}\right)^3}\,e^{cz}\,dz = \frac{\sqrt{\left(a+b\,e^{2cz}\right)^3}\left(3\log\left(2\left(e^{cz}\sqrt{b}+\sqrt{a+b\,e^{2cz}}\right)\right)a^2+\sqrt{b}\;e^{cz}\sqrt{a+b\,e^{2cz}}\left(5\,a+2\,b\,e^{2cz}\right)\right)}{8\sqrt{b}\;c\left(a+b\,e^{2cz}\right)^{3/2}}$$

01.03.21.0506.01

$$\int \frac{e^{cz}}{\sqrt{\left(a+b\,e^{2cz}\right)^3}}\,dz = \frac{e^{cz}\left(a+b\,e^{2cz}\right)}{a\,c\sqrt{\left(a+b\,e^{2cz}\right)^3}}$$

01.03.21.0507.01

$$\int \frac{e^{cz}}{\sqrt{\left(a+b\,e^{2cz}\right)^5}}\,dz = \frac{e^{cz}\left(a+b\,e^{2cz}\right)\left(3\,a+2\,b\,e^{2cz}\right)}{3\,a^2\,c\sqrt{\left(a+b\,e^{2cz}\right)^5}}$$

Involving $\left(a+b\,e^{2cz}\right)^{\beta}\left(e^{cz}\right)^{\nu}$

01.03.21.0508.01

$$\int \left(a+b\,e^{2cz}\right)^{\beta}\,(e^{cz})^{\nu}\,dz = \frac{(e^{cz})^{\nu}}{c\,\nu}\left(a+b\,e^{2cz}\right)^{\beta}\left(\frac{e^{2cz}\,b}{a}+1\right)^{-\beta}\,{}_2F_1\!\left(-\beta,\frac{\nu}{2};\frac{\nu}{2}+1;-\frac{b\,e^{2cz}}{a}\right)$$

01.03.21.0509.01

$$\int \left(a+b\,e^{2cz}\right)^{5/2}\,(e^{cz})^{\nu}\,dz = \left((e^{cz})^{\nu}\sqrt{a+b\,e^{2cz}}\left((\nu+2)\left((\nu+4)\,{}_2F_1\!\left(-\frac{1}{2},\frac{\nu}{2};\frac{\nu}{2}+1;-\frac{b\,e^{2cz}}{a}\right)a^2+b^2\,e^{4cz}\,\nu\,{}_2F_1\!\left(-\frac{1}{2},\frac{\nu}{2}+2;\frac{\nu}{2}+3;-\frac{b\,e^{2cz}}{a}\right)\right)+2\,a\,b\,e^{2cz}\,\nu\,(\nu+4)\,{}_2F_1\!\left(-\frac{1}{2},\frac{\nu}{2}+1;\frac{\nu}{2}+2;-\frac{b\,e^{2cz}}{a}\right)\right)\right)\Big/\left(c\sqrt{\frac{e^{2cz}\,b}{a}+1}\;\nu\,(\nu+2)\,(\nu+4)\right)$$

01.03.21.0510.01

$$\int \left(a+b\,e^{2cz}\right)^{3/2}\,(e^{cz})^{\nu}\,dz = \frac{(e^{cz})^{\nu}\sqrt{a+b\,e^{2cz}}}{c\sqrt{\frac{e^{2cz}\,b}{a}+1}\;\nu\,(\nu+2)}\left(a\,(\nu+2)\,{}_2F_1\!\left(-\frac{1}{2},\frac{\nu}{2};\frac{\nu}{2}+1;-\frac{b\,e^{2cz}}{a}\right)+b\,e^{2cz}\,\nu\,{}_2F_1\!\left(-\frac{1}{2},\frac{\nu}{2}+1;\frac{\nu}{2}+2;-\frac{b\,e^{2cz}}{a}\right)\right)$$

01.03.21.0511.01

$$\int \sqrt{a+b\,e^{2cz}}\,(e^{cz})^{\nu}\,dz = \frac{1}{c\sqrt{\frac{e^{2cz}\,b}{a}+1}\;\nu}\,(e^{cz})^{\nu}\sqrt{a+b\,e^{2cz}}\;{}_2F_1\!\left(-\frac{1}{2},\frac{\nu}{2};\frac{\nu}{2}+1;-\frac{b\,e^{2cz}}{a}\right)$$

01.03.21.0512.01

$$\int \frac{(e^{cz})^{\nu}}{\sqrt{a+b\,e^{2cz}}}\,dz = \frac{(e^{cz})^{\nu}}{c\sqrt{a+b\,e^{2cz}}\;\nu}\sqrt{\frac{e^{2cz}\,b}{a}+1}\;{}_2F_1\!\left(\frac{1}{2},\frac{\nu}{2};\frac{\nu}{2}+1;-\frac{b\,e^{2cz}}{a}\right)$$

01.03.21.0513.01

$$\int \frac{(e^{cz})^{\nu}}{\left(a+b\,e^{2cz}\right)^{3/2}}\,dz = \frac{1}{c\left(a+b\,e^{2cz}\right)^{3/2}\nu}\,(e^{cz})^{\nu}\left(\frac{e^{2cz}\,b}{a}+1\right)^{3/2}{}_2F_1\!\left(\frac{3}{2},\frac{\nu}{2};\frac{\nu}{2}+1;-\frac{b\,e^{2cz}}{a}\right)$$

01.03.21.0514.01

$$\int \frac{(e^{cz})^{\nu}}{\left(a+b\,e^{2cz}\right)^{5/2}}\,dz = \frac{1}{c\left(a+b\,e^{2cz}\right)^{5/2}\nu}\,(e^{cz})^{\nu}\left(\frac{e^{2cz}\,b}{a}+1\right)^{5/2}{}_2F_1\!\left(\frac{5}{2},\frac{\nu}{2};\frac{\nu}{2}+1;-\frac{b\,e^{2cz}}{a}\right)$$

Involving $e^{pz}\,(a+b\,e^{cz})^{\beta}\,(d+e\,e^{cz})^{\nu}$

01.03.21.0515.01

$$\int e^{pz}\,(a+b\,e^{cz})^{\beta}\,(d+e\,e^{cz})^{\nu}\,dz = \frac{e^{pz}}{p}\,(a+b\,e^{cz})^{\beta}\left(\frac{e^{cz}\,b}{a}+1\right)^{-\beta}(d+e\,e^{cz})^{\nu}\left(\frac{e^{cz}\,e}{d}+1\right)^{-\nu}F_1\!\left(\frac{p}{c};-\beta,-\nu;\frac{c+p}{c};-\frac{b\,e^{cz}}{a},-\frac{e\,e^{cz}}{d}\right)$$

01.03.21.0516.01

$$\int (a+b\,e^{c z})^{\beta}\,(d+e\,e^{c z})^{\nu}\,dz = \frac{1}{c\,(\beta+\nu)}\left(\frac{e^{-c z}\,a}{b}+1\right)^{-\beta}\left(\frac{e^{-c z}\,d}{e}+1\right)^{-\nu}(a+b\,e^{c z})^{\beta}\,(d+e\,e^{c z})^{\nu}\,F_1\!\left(-\beta-\nu;\,-\beta,\,-\nu;\,-\beta-\nu+1;\,-\frac{a\,e^{-c z}}{b},\,-\frac{d\,e^{-c z}}{e}\right)$$

Involving $\left(a\,e^{2 d z}+b\,e^{d z}+c\right)^{\beta}$

01.03.21.0517.01

$$\int \left(e^{2 d z}\,a+b\,e^{d z}+c\right)^{\beta}\,dz = \frac{1}{2\,d\,\beta}\left(\left(1-\frac{\left(\sqrt{b^2-4\,a\,c}-b\right)e^{-d z}}{2\,a}\right)^{-\beta}\left(\frac{e^{-d z}\left(b+\sqrt{b^2-4\,a\,c}\right)}{2\,a}+1\right)^{-\beta}\left(e^{2 d z}\,a+b\,e^{d z}+c\right)^{\beta}\,F_1\!\left(-2\,\beta;\,-\beta,\,-\beta;\,1-2\,\beta;\,-\frac{\left(b+\sqrt{b^2-4\,a\,c}\right)e^{-d z}}{2\,a},\,\frac{\left(\sqrt{b^2-4\,a\,c}-b\right)e^{-d z}}{2\,a}\right)\right)$$

01.03.21.0518.01

$$\int \sqrt{e^{2 d z}\,a+b\,e^{d z}+c}\;dz = \frac{1}{2\,d}\left(-2\,\sqrt{c}\,\log\!\left(\frac{d}{c^{3/2}}\,e^{-d z}\left(e^{d z}\,b+2\,c+2\,\sqrt{c}\,\sqrt{e^{2 d z}\,a+b\,e^{d z}+c}\right)\right)+\frac{b}{\sqrt{a}}\log\!\left(\frac{2\,e^{d z}\,a+b}{\sqrt{a}}+2\,\sqrt{c+e^{d z}\left(e^{d z}\,a+b\right)}\right)+2\,\sqrt{e^{2 d z}\,a+b\,e^{d z}+c}\right)$$

Involving $e^{e z}\left(a\,e^{2 d z}+b\,e^{d z}+c\right)^{\beta}$

01.03.21.0519.01

$$\int e^{e z}\left(e^{2 d z}\,a+b\,e^{d z}+c\right)^{\beta}\,dz = \frac{e^{e z}}{e}\left(1-\frac{2\,a\,e^{d z}}{\sqrt{b^2-4\,a\,c}-b}\right)^{-\beta}\left(\frac{2\,e^{d z}\,a}{b+\sqrt{b^2-4\,a\,c}}+1\right)^{-\beta}\left(e^{2 d z}\,a+b\,e^{d z}+c\right)^{\beta}\,F_1\!\left(\frac{e}{d};\,-\beta,\,-\beta;\,\frac{e}{d}+1;\,-\frac{2\,a\,e^{d z}}{b+\sqrt{b^2-4\,a\,c}},\,\frac{2\,a\,e^{d z}}{\sqrt{b^2-4\,a\,c}-b}\right)$$

Other integrals

01.03.21.0520.01

$$\int \sqrt{\frac{a+b\,e^{e\,z}}{c+d\,e^{e\,z}}}\,dz = \frac{1}{\sqrt{c}\,\sqrt{d}\,e\,\sqrt{a+b\,e^{e\,z}}}\left(\sqrt{\frac{a+b\,e^{e\,z}}{c+d\,e^{e\,z}}}\,\sqrt{c+d\,e^{e\,z}}\left(\sqrt{b}\,\sqrt{c}\,\log\left(\frac{a\,d+b\,(c+2\,d\,e^{e\,z})}{\sqrt{b}\,\sqrt{d}}+2\,\sqrt{a+b\,e^{e\,z}}\,\sqrt{c+d\,e^{e\,z}}\right)-\sqrt{a}\,\sqrt{d}\,\log\left(\frac{e\,e^{-e\,z}\left(b\,e^{e\,z}\,c+2\,a\,c+2\,\sqrt{a}\,\sqrt{a+b\,e^{e\,z}}\,\sqrt{c+d\,e^{e\,z}}\,\sqrt{c}+a\,d\,e^{e\,z}\right)}{a^{3/2}\,\sqrt{c}}\right)\right)\right)$$

01.03.21.0521.01

$$\int \frac{\sqrt{a+b\,e^{e\,z}}}{\sqrt{c+d\,e^{e\,z}}}\,dz = \frac{1}{e}\left(\frac{\sqrt{b}\,\log\left(\frac{a\,d+b\,(c+2\,d\,e^{e\,z})}{\sqrt{b}\,\sqrt{d}}+2\,\sqrt{a+b\,e^{e\,z}}\,\sqrt{c+d\,e^{e\,z}}\right)}{\sqrt{d}}-\frac{\sqrt{a}\,\log\left(\frac{e\,e^{-e\,z}\left(b\,e^{e\,z}\,c+2\,a\,c+2\,\sqrt{a}\,\sqrt{a+b\,e^{e\,z}}\,\sqrt{c+d\,e^{e\,z}}\,\sqrt{c}+a\,d\,e^{e\,z}\right)}{a^{3/2}\,\sqrt{c}}\right)}{\sqrt{c}}\right)$$

01.03.21.0522.01

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

01.03.21.0523.01

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

01.03.21.0524.01

$$\int \frac{e^{3\,z/4}}{\left(-2+e^{3\,z/4}\right)\sqrt{-2+e^{3\,z/4}+e^{3\,z/2}}}\,dz = \frac{2}{3}\left(\log\left(-2+e^{3\,z/4}\right)-\log\left(4\,\sqrt{-2+e^{3\,z/4}+e^{3\,z/2}}+5\,e^{3\,z/4}-2\right)\right)$$

Involving functions of the direct function and a power function

Involving powers of the direct function and a power function

Involving powers of exp and power

Involving $z^{\alpha-1}$and arguments $a\,z$

01.03.21.0525.01

$$\int z^{\alpha-1}\,(e^{a\,z})^{\nu}\,dz = -e^{-a\,z\,\nu}\,(e^{a\,z})^{\nu}\,z^{\alpha}\,(-a\,z\,\nu)^{-\alpha}\,\Gamma(\alpha,\,-a\,z\,\nu)$$

01.03.21.0526.01

$$\int \frac{(e^{a z})^{\nu}}{z}\,dz = e^{-a z \nu}\,(e^{a z})^{\nu}\,\mathrm{Ei}(a z \nu)$$

01.03.21.0527.01

$$\int z^n\,(e^{a z})^{\nu}\,dz = -e^{-a z \nu}\,(e^{a z})^{\nu}\,(-a \nu)^{-n-1}\,\Gamma(n+1, -a z \nu)\,/;\,n \in \mathbb{Z}$$

01.03.21.0528.01

$$\int z^n\,(e^{a z})^{\nu}\,dz = -e^{-a z \nu}\,(e^{a z})^{\nu}\,(-a \nu)^{-n-1}\left(\frac{(-1)^n\,\mathrm{Ei}(a z \nu)}{(-n-1)!} + e^{a z \nu}\sum_{k=0}^{n}\frac{(-a z \nu)^k}{(n+1)_{k-n}} - e^{a z \nu}\sum_{k=n+1}^{-1}\frac{(-a z \nu)^k}{(n+1)_{k-n}}\right)/;\,n \in \mathbb{Z}$$

01.03.21.0529.01

$$\int z\,(e^{a z})^{\nu}\,dz = \frac{(e^{a z})^{\nu}\,(a z \nu - 1)}{a^2\,\nu^2}$$

01.03.21.0530.01

$$\int z^{n+\frac{1}{2}}\,(e^{a z})^{\nu}\,dz = -\frac{e^{-a z \nu}}{\sqrt{-a z \nu}}\,(e^{a z})^{\nu}\,\sqrt{z}\,(-a \nu)^{-n-1}\,\Gamma\!\left(n+\frac{3}{2}, -a z \nu\right)/;\,n \in \mathbb{Z}$$

01.03.21.0531.01

$$\int z^{n+\frac{1}{2}}\,(e^{a z})^{\nu}\,dz = -\frac{e^{-a z \nu}}{\sqrt{-a z \nu}}\,(e^{a z})^{\nu}\,\sqrt{z}\,(-a \nu)^{-n-1}\left(\mathrm{erfc}\!\left(\sqrt{-a z \nu}\right)\Gamma\!\left(n+\frac{3}{2}\right) + e^{a z \nu}\sum_{k=0}^{n}\frac{(-a z \nu)^{k+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{k-n}} - e^{a z \nu}\sum_{k=n+1}^{-1}\frac{(-a z \nu)^{k+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{k-n}}\right)/;\,n \in \mathbb{Z}$$

Involving $z^{\alpha-1}$ and arguments $a z + b$

01.03.21.0532.01

$$\int z^{\alpha-1}\left(e^{b+a z}\right)^{\nu}dz = -e^{-a z \nu}\left(e^{b+a z}\right)^{\nu} z^{\alpha}\,(-a z \nu)^{-\alpha}\,\Gamma(\alpha, -a z \nu)$$

01.03.21.0533.01

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

01.03.21.0534.01

$$\int z^n\left(e^{b+a z}\right)^{\nu}dz = -e^{-a z \nu}\left(e^{b+a z}\right)^{\nu}(-a \nu)^{-n-1}\,\Gamma(n+1, -a z \nu)\,/;\,n \in \mathbb{Z}$$

01.03.21.0535.01

$$\int z^n\left(e^{b+a z}\right)^{\nu}dz = -e^{-a z \nu}\left(e^{b+a z}\right)^{\nu}(-a \nu)^{-n-1}\left(\frac{(-1)^n\,\mathrm{Ei}(a z \nu)}{(-n-1)!} + e^{a z \nu}\sum_{k=0}^{n}\frac{(-a z \nu)^k}{(n+1)_{k-n}} - e^{a z \nu}\sum_{k=n+1}^{-1}\frac{(-a z \nu)^k}{(n+1)_{k-n}}\right)/;\,n \in \mathbb{Z}$$

01.03.21.0536.01

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

01.03.21.0537.01

$$\int z^{n+\frac{1}{2}}\left(e^{b+a z}\right)^{\nu}dz = -\frac{e^{-a z \nu}}{\sqrt{-a z \nu}}\left(e^{b+a z}\right)^{\nu}\sqrt{z}\,(-a \nu)^{-n-1}\,\Gamma\!\left(n+\frac{3}{2}, -a z \nu\right)/;\,n \in \mathbb{Z}$$

01.03.21.0538.01

$$\int z^{n+\frac{1}{2}} \left(e^{b+a z}\right)^{\nu} \, dz = -\frac{e^{-a z \nu}}{\sqrt{-a z \nu}} \left(e^{b+a z}\right)^{\nu} \sqrt{z} \, (-a \nu)^{-n-1} \left(\text{erfc}\left(\sqrt{-a z \nu}\right) \Gamma\left(n+\frac{3}{2}\right) + e^{a z \nu} \sum_{k=0}^{n} \frac{(-a z \nu)^{k+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{k-n}} - e^{a z \nu} \sum_{k=n+1}^{-1} \frac{(-a z \nu)^{k+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{k-n}}\right) /; n \in \mathbb{Z}$$

Involving $z^{\alpha-1}$ and arguments $a z^r$

01.03.21.0539.01

$$\int z^{\alpha-1} \left(e^{a z^r}\right)^{\nu} \, dz = -\frac{e^{-a z^r \nu}}{r} \left(e^{a z^r}\right)^{\nu} z^{\alpha} \, (-a z^r \nu)^{-\frac{\alpha}{r}} \, \Gamma\left(\frac{\alpha}{r}, -a z^r \nu\right)$$

01.03.21.0540.01

$$\int \frac{\left(e^{a z^r}\right)^{\nu}}{z} \, dz = \frac{e^{-a z^r \nu} \left(e^{a z^r}\right)^{\nu} \text{Ei}(a z^r \nu)}{r}$$

01.03.21.0541.01

$$\int z^n \left(e^{a z^2}\right)^{\nu} \, dz = -\frac{1}{2} e^{-a z^2 \nu} \left(e^{a z^2}\right)^{\nu} z^{n+1} \left(-a z^2 \nu\right)^{\frac{1}{2}(-n-1)} \, \Gamma\left(\frac{n+1}{2}, -a z^2 \nu\right) /; n \in \mathbb{Z}$$

01.03.21.0542.01

$$\int z^{2n} \left(e^{a z^2}\right)^{\nu} \, dz = -\frac{1}{2} e^{-a z^2 \nu} \left(e^{a z^2}\right)^{\nu} z^{2n+1} \left(-a z^2 \nu\right)^{-n-\frac{1}{2}} \left(\text{erfc}\left(\sqrt{-a z^2 \nu}\right) \Gamma\left(n+\frac{1}{2}\right) + e^{a z^2 \nu} \sum_{j=0}^{n-1} \frac{\left(-a z^2 \nu\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} - e^{a z^2 \nu} \sum_{j=n}^{-1} \frac{\left(-a z^2 \nu\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}}\right) /; n \in \mathbb{Z}$$

01.03.21.0543.01

$$\int z^{2n+1} \left(e^{a z^2}\right)^{\nu} \, dz = -\frac{1}{2} e^{-a z^2 \nu} \left(e^{a z^2}\right)^{\nu} (-a \nu)^{-n-1} \left(\frac{(-1)^n \, \text{Ei}\left(a z^2 \nu\right)}{(-n-1)!} + e^{a z^2 \nu} \sum_{j=0}^{n} \frac{\left(-a z^2 \nu\right)^j}{(n+1)_{j-n}} - e^{a z^2 \nu} \sum_{j=n+1}^{-1} \frac{\left(-a z^2 \nu\right)^j}{(n+1)_{j-n}}\right) /; n \in \mathbb{Z}$$

01.03.21.0544.01

$$\int z^n \left(e^{a \sqrt{z}}\right)^{\nu} \, dz = -2 \, e^{-a \sqrt{z} \, \nu} \left(e^{a \sqrt{z}}\right)^{\nu} (-a \nu)^{-2(n+1)} \left(-\frac{\text{Ei}\left(a \sqrt{z} \, \nu\right)}{(-2(n+1))!} + e^{a \sqrt{z} \, \nu} \sum_{j=0}^{2n+1} \frac{\left(-a \sqrt{z} \, \nu\right)^j}{(2(n+1))_{j-2(n+1)+1}} - e^{a \sqrt{z} \, \nu} \sum_{j=2(n+1)}^{-1} \frac{\left(-a \sqrt{z} \, \nu\right)^j}{(2(n+1))_{j-2(n+1)+1}}\right) /; n \in \mathbb{Z}$$

Involving $z^{\alpha-1}$ and arguments $a z^r + b$

01.03.21.0545.01

$$\int z^{\alpha-1} \left(e^{a z^r+b}\right)^{\nu} \, dz = -\frac{1}{r} e^{-a z^r \nu} \left(e^{a z^r+b}\right)^{\nu} z^{\alpha} \, (-a z^r \nu)^{-\frac{\alpha}{r}} \, \Gamma\left(\frac{\alpha}{r}, -a z^r \nu\right)$$

01.03.21.0546.01

$$\int \frac{\left(e^{a z^r+b}\right)^{\nu}}{z} \, dz = \frac{e^{-a z^r \nu} \left(e^{a z^r+b}\right)^{\nu} \text{Ei}(a z^r \nu)}{r}$$

01.03.21.0547.01

$$\int z^n \left(e^{a z^2+b}\right)^{\nu} dz = -\frac{1}{2} e^{-a z^2 \nu} \left(e^{a z^2+b}\right)^{\nu} z^{n+1} \left(-a z^2 \nu\right)^{\frac{1}{2}(-n-1)} \Gamma\left(\frac{n+1}{2}, -a z^2 \nu\right) /; n \in \mathbb{Z}$$

01.03.21.0548.01

$$\int z^{2n} \left(e^{a z^2+b}\right)^{\nu} dz = -\frac{1}{2} e^{-a z^2 \nu} \left(e^{a z^2+b}\right)^{\nu} z^{2n+1} \left(-a z^2 \nu\right)^{-n-\frac{1}{2}} \left(\operatorname{erfc}\left(\sqrt{-a z^2 \nu}\right) \Gamma\left(n+\frac{1}{2}\right) + e^{a z^2 \nu} \sum_{j=0}^{n-1} \frac{\left(-a z^2 \nu\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} - e^{a z^2 \nu} \sum_{j=n}^{-1} \frac{\left(-a z^2 \nu\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}}\right) /; n \in \mathbb{Z}$$

01.03.21.0549.01

$$\int z^{2n+1} \left(e^{a z^2+b}\right)^{\nu} dz = -\frac{1}{2} e^{-a z^2 \nu} \left(e^{a z^2+b}\right)^{\nu} (-a \nu)^{-n-1} \left(\frac{(-1)^n \operatorname{Ei}\left(a z^2 \nu\right)}{(-n-1)!} + e^{a z^2 \nu} \sum_{j=0}^{n} \frac{\left(-a z^2 \nu\right)^j}{(n+1)_{j-n}} - e^{a z^2 \nu} \sum_{j=n+1}^{-1} \frac{\left(-a z^2 \nu\right)^j}{(n+1)_{j-n}}\right) /; n \in \mathbb{Z}$$

01.03.21.0550.01

$$\int z^n \left(e^{\sqrt{z}\, a+b}\right)^{\nu} dz = -2 e^{-a \sqrt{z}\, \nu} \left(e^{\sqrt{z}\, a+b}\right)^{\nu} (-a \nu)^{-2n-2} \left(-\frac{\operatorname{Ei}\left(a \sqrt{z}\, \nu\right)}{(-2(n+1))!} + e^{a \sqrt{z}\, \nu} \sum_{j=0}^{2(n+1)-1} \frac{\left(-a \sqrt{z}\, \nu\right)^j}{(2(n+1))_{j-2(n+1)+1}} - e^{a \sqrt{z}\, \nu} \sum_{j=2(n+1)}^{-1} \frac{\left(-a \sqrt{z}\, \nu\right)^j}{(2(n+1))_{j-2(n+1)+1}}\right) /; n \in \mathbb{Z}$$

Involving z^n and arguments $a z^r + b z$

01.03.21.0551.01

$$\int z^n \left(e^{a z^2+b z}\right)^{\nu} dz = -\frac{1}{2} e^{-\frac{b^2 \nu}{4a}-\left(a z^2+b z\right)\nu} a^{-1-n} \left(e^{a z^2+b z}\right)^{\nu} \sum_{j=0}^{n} 2^{j-n} (-b)^{n-j} (b+2 a z)^{j+1} \left(-\frac{(b+2 a z)^2 \nu}{a}\right)^{\frac{1}{2}(-j-1)} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(b+2 a z)^2 \nu}{4a}\right) /; n \in \mathbb{N}$$

01.03.21.0552.01

$$\int z^n \left(e^{\sqrt{z}\, a+b z}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{\nu a^2}{4b}-\left(\sqrt{z}\, a+b z\right)\nu} b^{-2(n+1)} \left(e^{\sqrt{z}\, a+b z}\right)^{\nu} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k a^{-h-k+2n} \left(a+2 b \sqrt{z}\right)^{h+k} \left(-\frac{\left(a+2 b \sqrt{z}\right)^2 \nu}{b}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h} \binom{n}{k} \left(a \left(a+2 b \sqrt{z}\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(a+2 b \sqrt{z}\right)^2 \nu}{4b}\right) + \frac{\sqrt{-\frac{\left(a+2 b \sqrt{z}\right)^2 \nu}{b}}\, (2b)\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(a+2 b \sqrt{z}\right)^2 \nu}{4b}\right)}{\nu}\right) /; n \in \mathbb{N}$$

Involving z^n and arguments $a z^r + b z + c$

01.03.21.0553.01

$$\int z^n \left(e^{a z^2+b z+c}\right)^{\nu} \, dz = -\frac{1}{2} e^{-\frac{b^2 \nu}{4 a}-\left(a z^2+b z\right) \nu} a^{-1-n} \left(e^{a z^2+b z+c}\right)^{\nu} \sum_{j=0}^{n} 2^{j-n} (-b)^{n-j} (b+2 a z)^{j+1} \left(-\frac{(b+2 a z)^2 \nu}{a}\right)^{\frac{1}{2}(-j-1)} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(b+2 a z)^2 \nu}{4 a}\right) /; n \in \mathbb{N}$$

01.03.21.0554.01

$$\int z^n \left(e^{\sqrt{z}\, a+b z+c}\right)^{\nu} \, dz = 2^{-2 n-1} e^{-\frac{\nu a^2}{4 b}-\left(\sqrt{z}\, a+b z\right) \nu} b^{-2 (n+1)} \left(e^{\sqrt{z}\, a+c+b z}\right)^{\nu} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k a^{-h-k+2 n} \left(a+2 b \sqrt{z}\right)^{h+k} \left(-\frac{\left(a+2 b \sqrt{z}\right)^2 \nu}{b}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h} \binom{n}{k} \left(a \left(a+2 b \sqrt{z}\right) \Gamma\left(\frac{1}{2} (h+k+1), -\frac{\left(a+2 b \sqrt{z}\right)^2 \nu}{4 b}\right) + \frac{\sqrt{-\frac{\left(a+2 b \sqrt{z}\right)^2 \nu}{b}} \, (2 b) \, \Gamma\left(\frac{1}{2} (h+k+2), -\frac{\left(a+2 b \sqrt{z}\right)^2 \nu}{4 b}\right)}{\nu}\right) /; n \in \mathbb{N}$$

Involving products of the direct function and a power function

Involving products of two direct functions and a power function

Involving $z^{\alpha-1} a^{d z} h^{c z}$

01.03.21.0555.01

$$\int z^{\alpha-1} a^{d z} h^{c z} \, dz = -z^{\alpha} \, \Gamma(\alpha, -z (d \log(a)+c \log(h))) (-z (d \log(a)+c \log(h)))^{-\alpha}$$

01.03.21.0556.01

$$\int z^n a^{d z} h^{c z} \, dz = -z^{n+1} \, \Gamma(n+1, -z (d \log(a)+c \log(h))) (-z (d \log(a)+c \log(h)))^{-n-1} /; n \in \mathbb{Z}$$

01.03.21.0557.01

$$\int z^n a^{d z} h^{c z} \, dz = z^{n+1} (-z (d \log(a)+c \log(h)))^{-n-1} \left(-a^{d z} \left(\sum_{k=0}^{n} \frac{(-z (d \log(a)+c \log(h)))^k}{(n+1)_{k-n}}\right) h^{c z} + a^{d z} \left(\sum_{k=n+1}^{-1} \frac{(-z (d \log(a)+c \log(h)))^k}{(n+1)_{k-n}}\right) h^{c z} - \frac{1}{2 (-n-1)!} (-1)^n \left(2 \, \mathrm{Ei}(z (d \log(a)+c \log(h))) + 2 \log(-z (d \log(a)+c \log(h))) - \log(z (d \log(a)+c \log(h))) + \log\left(\frac{1}{d z \log(a)+c z \log(h)}\right)\right)\right) /; n \in \mathbb{Z}$$

01.03.21.0558.01

$$\int z^{n+\frac{1}{2}} a^{d z} h^{c z} \, dz = -z^{n+\frac{3}{2}} (-z (d \log(a) + c \log(h)))^{-n-\frac{3}{2}} \left(a^{d z} \left(\sum_{k=0}^{n} \frac{(-z (d \log(a) + c \log(h)))^{k+\frac{1}{2}}}{\left(n + \frac{3}{2}\right)_{k-n}} \right) h^{c z} - a^{d z} \left(\sum_{k=n+1}^{-1} \frac{(-z (d \log(a) + c \log(h)))^{k+\frac{1}{2}}}{\left(n + \frac{3}{2}\right)_{k-n}} \right) h^{c z} + \operatorname{erfc}\left(\sqrt{-z (d \log(a) + c \log(h))}\right) \Gamma\left(n + \frac{3}{2}\right) \right) /; n \in \mathbb{Z}$$

Involving $z^{\alpha-1} a^{d z} h^{c z+g}$

01.03.21.0559.01

$$\int z^{\alpha-1} a^{d z} h^{g+c z} \, dz = -h^g z^\alpha \, \Gamma(\alpha, -z (d \log(a) + c \log(h))) (-z (d \log(a) + c \log(h)))^{-\alpha}$$

01.03.21.0560.01

$$\int z^n a^{d z} h^{g+c z} \, dz = -h^g z^{n+1} \, \Gamma(n+1, -z (d \log(a) + c \log(h))) (-z (d \log(a) + c \log(h)))^{-n-1} /; n \in \mathbb{Z}$$

01.03.21.0561.01

$$\int z^n a^{d z} h^{g+c z} \, dz = h^g z^{n+1} (-z (d \log(a) + c \log(h)))^{-n-1} \left(-a^{d z} \left(\sum_{k=0}^{n} \frac{(-z (d \log(a) + c \log(h)))^k}{(n+1)_{k-n}} \right) h^{c z} + a^{d z} \left(\sum_{k=n+1}^{-1} \frac{(-z (d \log(a) + c \log(h)))^k}{(n+1)_{k-n}} \right) h^{c z} - \frac{1}{2 (-n-1)!} (-1)^n \left(2 \operatorname{Ei}(z (d \log(a) + c \log(h))) + 2 \log(-z (d \log(a) + c \log(h))) - \log(z (d \log(a) + c \log(h))) + \log\left(\frac{1}{d z \log(a) + c z \log(h)}\right) \right) \right) /; n \in \mathbb{Z}$$

01.03.21.0562.01

$$\int z^{n+\frac{1}{2}} a^{d z} h^{g+c z} \, dz = -h^g z^{n+\frac{3}{2}} (-z (d \log(a) + c \log(h)))^{-n-\frac{3}{2}} \left(a^{d z} \left(\sum_{k=0}^{n} \frac{(-z (d \log(a) + c \log(h)))^{k+\frac{1}{2}}}{\left(n + \frac{3}{2}\right)_{k-n}} \right) h^{c z} - a^{d z} \left(\sum_{k=n+1}^{-1} \frac{(-z (d \log(a) + c \log(h)))^{k+\frac{1}{2}}}{\left(n + \frac{3}{2}\right)_{k-n}} \right) h^{c z} + \operatorname{erfc}\left(\sqrt{-z (d \log(a) + c \log(h))}\right) \Gamma\left(n + \frac{3}{2}\right) \right) /; n \in \mathbb{Z}$$

Involving $z^{\alpha-1} a^{d z+e} h^{c z+g}$

01.03.21.0563.01

$$\int z^{\alpha-1} a^{e+d z} h^{g+c z} \, dz = -a^e h^g z^\alpha \, \Gamma(\alpha, -z (d \log(a) + c \log(h))) (-z (d \log(a) + c \log(h)))^{-\alpha}$$

01.03.21.0564.01

$$\int z^n a^{e+d z} h^{g+c z} \, dz = -a^e h^g z^{n+1} \, \Gamma(n+1, -z (d \log(a) + c \log(h))) (-z (d \log(a) + c \log(h)))^{-n-1} /; n \in \mathbb{Z}$$

01.03.21.0565.01

$$\int z^n a^{e+dz} h^{g+cz}\, dz = a^e h^g z^{n+1} (-z(d\log(a)+c\log(h)))^{-n-1} \left(-a^{dz}\left(\sum_{k=0}^{n} \frac{(-z(d\log(a)+c\log(h)))^k}{(n+1)_{k-n}}\right) h^{cz} + a^{dz}\left(\sum_{k=n+1}^{-1} \frac{(-z(d\log(a)+c\log(h)))^k}{(n+1)_{k-n}}\right) h^{cz} - \frac{1}{2(-n-1)!}(-1)^n \left(2\,\text{Ei}(z(d\log(a)+c\log(h))) + 2\log(-z(d\log(a)+c\log(h))) - \log(z(d\log(a)+c\log(h))) + \log\left(\frac{1}{d z\log(a)+c z\log(h)}\right)\right)\right) /; n \in \mathbb{Z}$$

01.03.21.0566.01

$$\int z^{n+\frac{1}{2}} a^{e+dz} h^{g+cz}\, dz = -a^e h^g z^{n+\frac{3}{2}} (-z(d\log(a)+c\log(h)))^{-n-\frac{3}{2}} \left(a^{dz}\left(\sum_{k=0}^{n} \frac{(-z(d\log(a)+c\log(h)))^{k+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{k-n}}\right) h^{cz} - a^{dz}\left(\sum_{k=n+1}^{-1} \frac{(-z(d\log(a)+c\log(h)))^{k+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{k-n}}\right) h^{cz} + \text{erfc}\left(\sqrt{-z(d\log(a)+c\log(h))}\right)\Gamma\left(n+\frac{3}{2}\right)\right) /; n \in \mathbb{Z}$$

Involving $z^n a^{bz} h^{cz^r}$

01.03.21.0567.01

$$\int z^n a^{bz} h^{cz^2}\, dz = -\frac{1}{2} e^{-\frac{b^2\log^2(a)}{4c\log(h)}} (c\log(h))^{-n-1} \sum_{j=0}^{n} 2^{j-n} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(b\log(a)+2cz\log(h))^2}{4c\log(h)}\right) (-b\log(a))^{n-j} (b\log(a)+2cz\log(h))^{j+1} \left(-\frac{(b\log(a)+2cz\log(h))^2}{c\log(h)}\right)^{\frac{1}{2}(-j-1)} /; n \in \mathbb{N}$$

01.03.21.0568.01

$$\int z^n a^{bz} h^{c\sqrt{z}}\, dz = 2^{-2n-1} e^{-\frac{c^2\log^2(h)}{4b\log(a)}} (b\log(a))^{-2(n+1)} \sum_{k=0}^{n}\sum_{j=0}^{k} (-1)^{k-j} 4^k \binom{k}{j}\binom{n}{k} (c\log(h))^{-j-k+2n} \left(2b\sqrt{z}\log(a)+c\log(h)\right)^{j+k} \left(-\frac{\left(2b\sqrt{z}\log(a)+c\log(h)\right)^2}{b\log(a)}\right)^{\frac{1}{2}(-j-k-1)} \left(2b\,\Gamma\left(\frac{1}{2}(j+k+2), -\frac{\left(2b\sqrt{z}\log(a)+c\log(h)\right)^2}{4b\log(a)}\right)\sqrt{-\frac{\left(2b\sqrt{z}\log(a)+c\log(h)\right)^2}{b\log(a)}}\log(a) + c\,\Gamma\left(\frac{1}{2}(j+k+1), -\frac{\left(2b\sqrt{z}\log(a)+c\log(h)\right)^2}{4b\log(a)}\right)\log(h)\left(2b\sqrt{z}\log(a)+c\log(h)\right)\right) /; n \in \mathbb{N}$$

Involving $z^n a^{d z+e} h^{c z^r}$

01.03.21.0569.01

$$\int z^n a^{e+d z} h^{c z^2}\, dz = -\frac{1}{2} a^e e^{-\frac{d^2 \log^2(a)}{4 c \log(h)}} (c \log(h))^{-n-1} \sum_{j=0}^{n} 2^{j-n} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(d \log(a)+2 c z \log(h))^2}{4 c \log(h)}\right) (-d \log(a))^{n-j} (d \log(a)+2 c z \log(h))^{j+1} \left(-\frac{(d \log(a)+2 c z \log(h))^2}{c \log(h)}\right)^{\frac{1}{2}(-j-1)} /; n \in \mathbb{N}$$

01.03.21.0570.01

$$\int z^n a^{e+d z} h^{c \sqrt{z}}\, dz = 2^{-2 n-1} a^e e^{-\frac{c^2 \log^2(h)}{4 d \log(a)}} (d \log(a))^{-2(n+1)} \sum_{k=0}^{n} \sum_{j=0}^{k} (-1)^{k-j} 4^k \binom{k}{j} \binom{n}{k} (c \log(h))^{-j-k+2 n} \left(2 d \sqrt{z} \log(a)+c \log(h)\right)^{j+k} \left(-\frac{\left(2 d \sqrt{z} \log(a)+c \log(h)\right)^2}{d \log(a)}\right)^{\frac{1}{2}(-j-k-1)} \left(2 d \Gamma\left(\frac{1}{2}(j+k+2), -\frac{\left(2 d \sqrt{z} \log(a)+c \log(h)\right)^2}{4 d \log(a)}\right) \sqrt{-\frac{\left(2 d \sqrt{z} \log(a)+c \log(h)\right)^2}{d \log(a)}} \log(a) + c \Gamma\left(\frac{1}{2}(j+k+1), -\frac{\left(2 d \sqrt{z} \log(a)+c \log(h)\right)^2}{4 d \log(a)}\right) \log(h) \left(2 d \sqrt{z} \log(a)+c \log(h)\right)\right) /; n \in \mathbb{N}$$

Involving $z^{\alpha-1} a^{b z^r} h^{c z^r}$

01.03.21.0571.01

$$\int z^{\alpha-1} a^{b z^r} h^{c z^r}\, dz = -\frac{z^\alpha \Gamma\left(\frac{\alpha}{r}, -z^r (b \log(a)+c \log(h))\right) (-z^r (b \log(a)+c \log(h)))^{-\frac{\alpha}{r}}}{r}$$

01.03.21.0572.01

$$\int z^n a^{b z^2} h^{c z^2}\, dz = -\frac{1}{2} z^{n+1} \Gamma\left(\frac{n+1}{2}, -z^2 (b \log(a)+c \log(h))\right) \left(-z^2 (b \log(a)+c \log(h))\right)^{\frac{1}{2}(-n-1)} /; n \in \mathbb{Z}$$

01.03.21.0573.01

$$\int z^{2 n} a^{b z^2} h^{c z^2}\, dz = -\frac{1}{2} z^{2 n+1} \left(-z^2 (b \log(a)+c \log(h))\right)^{-n-\frac{1}{2}} \left(h^{c z^2} a^{b z^2} \sum_{j=0}^{n-1} \frac{\left(-z^2 (b \log(a)+c \log(h))\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} - h^{c z^2} a^{b z^2} \sum_{j=n}^{-1} \frac{\left(-z^2 (b \log(a)+c \log(h))\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} + \operatorname{erfc}\left(\sqrt{-z^2 (b \log(a)+c \log(h))}\right) \Gamma\left(n+\frac{1}{2}\right)\right) /; n \in \mathbb{Z}$$

01.03.21.0574.01

$$\int z^{2n+1} a^{b z^2} h^{c z^2} \, dz = -\frac{1}{2} (-b\log(a) - c\log(h))^{-n-1} \left(h^{c z^2} \left(\sum_{j=0}^{n} \frac{\left(-z^2 (b\log(a)+c\log(h))\right)^j}{(n+1)_{j-n}} \right) a^{b z^2} - h^{c z^2} \left(\sum_{j=n+1}^{-1} \frac{\left(-z^2 (b\log(a)+c\log(h))\right)^j}{(n+1)_{j-n}} \right) a^{b z^2} + \frac{(-1)^n \operatorname{Ei}\left(z^2 (b\log(a)+c\log(h))\right)}{(-n-1)!} \right) /; n \in \mathbb{Z}$$

01.03.21.0575.01

$$\int z^n a^{\sqrt{z}\, b} h^{\sqrt{z}\, c} \, dz = -2\,\Gamma\left(2(n+1), -\sqrt{z}\,(b\log(a)+c\log(h))\right) (b\log(a)+c\log(h))^{-2(n+1)} /; n \in \mathbb{Z}$$

01.03.21.0576.01

$$\int z^n a^{\sqrt{z}\, b} h^{\sqrt{z}\, c} \, dz = -2 (b\log(a)+c\log(h))^{-2(n+1)} \left(-\frac{\operatorname{Ei}\left(\sqrt{z}\,(b\log(a)+c\log(h))\right)}{(-2(n+1))!} + e^{\sqrt{z}\,(b\log(a)+c\log(h))} \sum_{j=0}^{2n+1} \frac{\left(-\sqrt{z}\,(b\log(a)+c\log(h))\right)^j}{(2(n+1))_{j-2n-1}} - e^{\sqrt{z}\,(b\log(a)+c\log(h))} \sum_{j=2(n+1)}^{-1} \frac{\left(-\sqrt{z}\,(b\log(a)+c\log(h))\right)^j}{(2(n+1))_{j-2n-1}} \right) /; n \in \mathbb{Z}$$

Involving $z^n a^{d z} h^{c z^r + g}$

01.03.21.0577.01

$$\int z^n a^{d z} h^{c z^2 + g} \, dz = -\frac{1}{2} e^{-\frac{d^2 \log^2(a)}{4 c \log(h)}} h^g (c\log(h))^{-n-1} \sum_{j=0}^{n} 2^{j-n} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(d\log(a)+2 c z\log(h))^2}{4 c\log(h)}\right) (-d\log(a))^{n-j} (d\log(a)+2 c z\log(h))^{j+1} \left(-\frac{(d\log(a)+2 c z\log(h))^2}{c\log(h)}\right)^{\frac{1}{2}(-j-1)} /; n \in \mathbb{N}$$

01.03.21.0578.01

$$\int z^n a^{d z} h^{\sqrt{z}\, c+g} \, dz = 2^{-2n-1} e^{-\frac{c^2 \log^2(h)}{4 d \log(a)}} h^g (d\log(a))^{-2(n+1)} \sum_{k=0}^{n} \sum_{j=0}^{k} (-1)^{k-j} 4^k \binom{k}{j} \binom{n}{k} (c\log(h))^{-j-k+2n} \left(2 d\sqrt{z}\,\log(a)+c\log(h)\right)^{j+k} \left(-\frac{\left(2 d\sqrt{z}\,\log(a)+c\log(h)\right)^2}{d\log(a)}\right)^{\frac{1}{2}(-j-k-1)} \left(2 d\,\Gamma\left(\frac{1}{2}(j+k+2), -\frac{\left(2 d\sqrt{z}\,\log(a)+c\log(h)\right)^2}{4 d\log(a)}\right) \sqrt{-\frac{\left(2 d\sqrt{z}\,\log(a)+c\log(h)\right)^2}{d\log(a)}} \log(a) + c\,\Gamma\left(\frac{1}{2}(j+k+1), -\frac{\left(2 d\sqrt{z}\,\log(a)+c\log(h)\right)^2}{4 d\log(a)}\right) \log(h) \left(2 d\sqrt{z}\,\log(a)+c\log(h)\right) \right) /; n \in \mathbb{N}$$

Involving $z^n a^{d z+e} h^{c z^r+g}$

01.03.21.0579.01

$$\int z^n a^{e+d z} h^{c z^2+g} \, dz = -\frac{1}{2} a^e e^{-\frac{d^2 \log^2(a)}{4 c \log(h)}} h^g (c \log(h))^{-n-1} \sum_{j=0}^n 2^{j-n} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(d \log(a) + 2 c z \log(h))^2}{4 c \log(h)}\right) (-d \log(a))^{n-j} (d \log(a) + 2 c z \log(h))^{j+1} \left(-\frac{(d \log(a) + 2 c z \log(h))^2}{c \log(h)}\right)^{\frac{1}{2}(-j-1)} /; n \in \mathbb{N}$$

01.03.21.0580.01

$$\int z^n a^{e+d z} h^{\sqrt{z} c+g} \, dz = 2^{-2n-1} a^e e^{-\frac{c^2 \log^2(h)}{4 d \log(a)}} h^g (d \log(a))^{-2(n+1)} \sum_{k=0}^n \sum_{j=0}^k (-1)^{k-j} 4^k \binom{k}{j} \binom{n}{k} (c \log(h))^{-j-k+2n} \left(2 d \sqrt{z} \log(a) + c \log(h)\right)^{j+k} \left(-\frac{\left(2 d \sqrt{z} \log(a) + c \log(h)\right)^2}{d \log(a)}\right)^{\frac{1}{2}(-j-k-1)} \left(2 d \Gamma\left(\frac{1}{2}(j+k+2), -\frac{\left(2 d \sqrt{z} \log(a) + c \log(h)\right)^2}{4 d \log(a)}\right) \sqrt{-\frac{\left(2 d \sqrt{z} \log(a) + c \log(h)\right)^2}{d \log(a)}} \log(a) + c \Gamma\left(\frac{1}{2}(j+k+1), -\frac{\left(2 d \sqrt{z} \log(a) + c \log(h)\right)^2}{4 d \log(a)}\right) \log(h) \left(2 d \sqrt{z} \log(a) + c \log(h)\right)\right) /; n \in \mathbb{N}$$

Involving $z^{\alpha-1} a^{b z^r} h^{c z^r+g}$

01.03.21.0581.01

$$\int z^{\alpha-1} a^{b z^r} h^{c z^r+g} \, dz = -\frac{h^g z^\alpha \Gamma\left(\frac{\alpha}{r}, -z^r (b \log(a) + c \log(h))\right) (-z^r (b \log(a) + c \log(h)))^{-\frac{\alpha}{r}}}{r}$$

01.03.21.0582.01

$$\int z^n a^{b z^2} h^{c z^2+g} \, dz = -\frac{1}{2} h^g z^{n+1} \Gamma\left(\frac{n+1}{2}, -z^2 (b \log(a) + c \log(h))\right) \left(-z^2 (b \log(a) + c \log(h))\right)^{\frac{1}{2}(-n-1)} /; n \in \mathbb{Z}$$

01.03.21.0583.01

$$\int z^{2n} a^{b z^2} h^{c z^2+g} \, dz = -\frac{1}{2} h^g z^{2n+1} \left(-z^2 (b \log(a) + c \log(h))\right)^{-n-\frac{1}{2}} \left(h^{c z^2} a^{b z^2} \sum_{j=0}^{n-1} \frac{\left(-z^2 (b \log(a) + c \log(h))\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} - h^{c z^2} a^{b z^2} \sum_{j=n}^{-1} \frac{\left(-z^2 (b \log(a) + c \log(h))\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} + \operatorname{erfc}\left(\sqrt{-z^2 (b \log(a) + c \log(h))}\right) \Gamma\left(n+\frac{1}{2}\right)\right) /; n \in \mathbb{Z}$$

01.03.21.0584.01

$$\int z^{2n+1} a^{b z^2} h^{c z^2+g} \, dz = -\frac{1}{2} h^g (-b \log(a) - c \log(h))^{-n-1} \left(h^{c z^2} \left(\sum_{j=0}^{n} \frac{\left(-z^2 (b \log(a) + c \log(h))\right)^j}{(n+1)_{j-n}} \right) a^{b z^2} - h^{c z^2} \left(\sum_{j=n+1}^{-1} \frac{\left(-z^2 (b \log(a) + c \log(h))\right)^j}{(n+1)_{j-n}} \right) a^{b z^2} + \frac{(-1)^n \operatorname{Ei}\left(z^2 (b \log(a) + c \log(h))\right)}{(-n-1)!} \right) /; n \in \mathbb{Z}$$

01.03.21.0585.01

$$\int z^n a^{\sqrt{z}\, b} h^{\sqrt{z}\, c+g} \, dz = -2 h^g \, \Gamma\left(2(n+1), -\sqrt{z}\, (b \log(a) + c \log(h))\right) (b \log(a) + c \log(h))^{-2(n+1)} /; n \in \mathbb{Z}$$

01.03.21.0586.01

$$\int z^n a^{\sqrt{z}\, b} h^{\sqrt{z}\, c+g} \, dz = -2 h^g (b \log(a) + c \log(h))^{-2(n+1)} \left(-\frac{\operatorname{Ei}\left(\sqrt{z}\, (b \log(a) + c \log(h))\right)}{(-2(n+1))!} + e^{\sqrt{z}\, (b \log(a) + c \log(h))} \sum_{j=0}^{2n+1} \frac{\left(-\sqrt{z}\, (b \log(a) + c \log(h))\right)^j}{(2(n+1))_{j-2n-1}} - e^{\sqrt{z}\, (b \log(a) + c \log(h))} \sum_{j=2(n+1)}^{-1} \frac{\left(-\sqrt{z}\, (b \log(a) + c \log(h))\right)^j}{(2(n+1))_{j-2n-1}} \right) /; n \in \mathbb{Z}$$

Involving $z^{\alpha-1} a^{b z^r+e} h^{c z^r+g}$

01.03.21.0587.01

$$\int z^{\alpha-1} a^{b z^r+e} h^{c z^r+g} \, dz = -\frac{a^e h^g z^\alpha \, \Gamma\left(\frac{\alpha}{r}, -z^r (b \log(a) + c \log(h))\right) (-z^r (b \log(a) + c \log(h)))^{-\frac{\alpha}{r}}}{r}$$

01.03.21.0588.01

$$\int z^n a^{b z^2+e} h^{c z^2+g} \, dz = -\frac{1}{2} a^e h^g z^{n+1} \, \Gamma\left(\frac{n+1}{2}, -z^2 (b \log(a) + c \log(h))\right) \left(-z^2 (b \log(a) + c \log(h))\right)^{\frac{1}{2}(-n-1)} /; n \in \mathbb{Z}$$

01.03.21.0589.01

$$\int z^{2n} a^{b z^2+e} h^{c z^2+g} \, dz = -\frac{1}{2} a^e h^g z^{2n+1} \left(-z^2 (b \log(a) + c \log(h))\right)^{-n-\frac{1}{2}} \left(h^{c z^2} a^{b z^2} \sum_{j=0}^{n-1} \frac{\left(-z^2 (b \log(a) + c \log(h))\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} - h^{c z^2} a^{b z^2} \sum_{j=n}^{-1} \frac{\left(-z^2 (b \log(a) + c \log(h))\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} + \operatorname{erfc}\left(\sqrt{-z^2 (b \log(a) + c \log(h))}\right) \Gamma\left(n+\frac{1}{2}\right) \right) /; n \in \mathbb{Z}$$

01.03.21.0590.01

$$\int z^{2n+1} a^{b z^2+e} h^{c z^2+g} \, dz = -\frac{1}{2} a^e h^g (-b \log(a) - c \log(h))^{-n-1} \left(h^{c z^2} \left(\sum_{j=0}^{n} \frac{\left(-z^2 (b \log(a) + c \log(h))\right)^j}{(n+1)_{j-n}} \right) a^{b z^2} - h^{c z^2} \left(\sum_{j=n+1}^{-1} \frac{\left(-z^2 (b \log(a) + c \log(h))\right)^j}{(n+1)_{j-n}} \right) a^{b z^2} + \frac{(-1)^n \operatorname{Ei}\left(z^2 (b \log(a) + c \log(h))\right)}{(-n-1)!} \right) /; n \in \mathbb{Z}$$

01.03.21.0591.01

$$\int z^n a^{\sqrt{z}\, b+e} h^{\sqrt{z}\, c+g}\, dz = -2\, a^e h^g\, \Gamma\left(2(n+1), -\sqrt{z}\,(b\log(a)+c\log(h))\right)(b\log(a)+c\log(h))^{-2(n+1)} \,/;\, n\in\mathbb{Z}$$

01.03.21.0592.01

$$\int z^n a^{\sqrt{z}\, b+e} h^{\sqrt{z}\, c+g}\, dz = -2\, a^e h^g (b\log(a)+c\log(h))^{-2(n+1)} \left(-\frac{\operatorname{Ei}\left(\sqrt{z}\,(b\log(a)+c\log(h))\right)}{(-2(n+1))!} + e^{\sqrt{z}\,(b\log(a)+c\log(h))} \sum_{j=0}^{2n+1} \frac{\left(-\sqrt{z}\,(b\log(a)+c\log(h))\right)^j}{(2(n+1))_{j-2n-1}} - e^{\sqrt{z}\,(b\log(a)+c\log(h))} \sum_{j=2(n+1)}^{-1} \frac{\left(-\sqrt{z}\,(b\log(a)+c\log(h))\right)^j}{(2(n+1))_{j-2n-1}}\right) /;\, n\in\mathbb{Z}$$

Involving $z^n a^{d z} h^{c z^r+f z}$

01.03.21.0593.01

$$\int z^n a^{d z} h^{c z^2+f z}\, dz = -\frac{1}{2} e^{-\frac{(d\log(a)+f\log(h))^2}{4c\log(h)}} (c\log(h))^{-n-1} \sum_{j=0}^{n} 2^{j-n} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(d\log(a)+(f+2cz)\log(h))^2}{4c\log(h)}\right) (-d\log(a)-f\log(h))^{n-j} (d\log(a)+(f+2cz)\log(h))^{j+1} \left(-\frac{(d\log(a)+(f+2cz)\log(h))^2}{c\log(h)}\right)^{\frac{1}{2}(-j-1)} /;\, n\in\mathbb{N}$$

01.03.21.0594.01

$$\int z^n a^{d z} h^{\sqrt{z}\, c+f z}\, dz = 2^{-2n-1} e^{-\frac{c^2\log^2(h)}{4(d\log(a)+f\log(h))}} (d\log(a)+f\log(h))^{-2(n+1)} \sum_{k=0}^{n}\sum_{j=0}^{k} (-1)^{k-j} 4^k \binom{k}{j}\binom{n}{k} (c\log(h))^{-j-k+2n} \left(c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^{j+k} \left(-\frac{\left(c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{d\log(a)+f\log(h)}\right)^{\frac{1}{2}(-j-k-1)} \left(2\,\Gamma\left(\frac{1}{2}(j+k+2), -\frac{\left(c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{4(d\log(a)+f\log(h))}\right) \sqrt{-\frac{\left(c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{d\log(a)+f\log(h)}}\,(d\log(a)+f\log(h)) + c\,\Gamma\left(\frac{1}{2}(j+k+1), -\frac{\left(c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{4(d\log(a)+f\log(h))}\right) \log(h)\left(c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)\right) /;\, n\in\mathbb{N}$$

Involving $z^n a^{d z+e} h^{c z^r+f z}$

01.03.21.0595.01

$$\int z^n a^{e+d z} h^{c z^2+f z} \, dz = -\frac{1}{2} a^e e^{-\frac{(d \log(a)+f \log(h))^2}{4 c \log(h)}} (c \log(h))^{-n-1} \sum_{j=0}^{n} 2^{j-n} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(d \log(a)+(f+2 c z) \log(h))^2}{4 c \log(h)}\right) (-d \log(a)-f \log(h))^{n-j}$$
$$(d \log(a)+(f+2 c z) \log(h))^{j+1} \left(-\frac{(d \log(a)+(f+2 c z) \log(h))^2}{c \log(h)}\right)^{\frac{1}{2}(-j-1)} /; n \in \mathbb{N}$$

01.03.21.0596.01

$$\int z^n a^{e+d z} h^{\sqrt{z}\, c+f z} \, dz = 2^{-2 n-1} a^e e^{-\frac{c^2 \log^2(h)}{4 (d \log(a)+f \log(h))}} (d \log(a)+f \log(h))^{-2 (n+1)}$$
$$\sum_{k=0}^{n} \sum_{j=0}^{k} (-1)^{k-j} 4^k \binom{k}{j} \binom{n}{k} (c \log(h))^{-j-k+2 n} \left(c \log(h)+2 \sqrt{z} (d \log(a)+f \log(h))\right)^{j+k}$$
$$\left(-\frac{\left(c \log(h)+2 \sqrt{z} (d \log(a)+f \log(h))\right)^2}{d \log(a)+f \log(h)}\right)^{\frac{1}{2}(-j-k-1)} \left(2 \Gamma\left(\frac{1}{2} (j+k+2), -\frac{\left(c \log(h)+2 \sqrt{z} (d \log(a)+f \log(h))\right)^2}{4 (d \log(a)+f \log(h))}\right)\right.$$
$$\sqrt{-\frac{\left(c \log(h)+2 \sqrt{z} (d \log(a)+f \log(h))\right)^2}{d \log(a)+f \log(h)}} (d \log(a)+f \log(h))+c \Gamma\left(\frac{1}{2} (j+k+1),\right.$$
$$\left.\left.-\frac{\left(c \log(h)+2 \sqrt{z} (d \log(a)+f \log(h))\right)^2}{4 (d \log(a)+f \log(h))}\right) \log(h) \left(c \log(h)+2 \sqrt{z} (d \log(a)+f \log(h))\right)\right) /; n \in \mathbb{N}$$

Involving $z^n a^{b z^r} h^{c z^r+f z}$

01.03.21.0597.01

$$\int z^n a^{b z^2} h^{c z^2+f z} \, dz = -\frac{1}{2} e^{-\frac{f^2 \log^2(h)}{4 (b \log(a)+c \log(h))}} (b \log(a)+c \log(h))^{-n-1} \sum_{j=0}^{n} 2^{j-n} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(2 b z \log(a)+(f+2 c z) \log(h))^2}{4 (b \log(a)+c \log(h))}\right) (-f \log(h))^{n-j}$$
$$(2 b z \log(a)+(f+2 c z) \log(h))^{j+1} \left(-\frac{(2 b z \log(a)+(f+2 c z) \log(h))^2}{b \log(a)+c \log(h)}\right)^{\frac{1}{2}(-j-1)} /; n \in \mathbb{N}$$

01.03.21.0598.01

$$\int z^n a^{b\sqrt{z}} h^{\sqrt{z}\, c+f z}\, dz = 2^{-2n-1} e^{-\frac{(b\log(a)+c\log(h))^2}{4 f \log(h)}} (f\log(h))^{-2(n+1)} \sum_{k=0}^{n}\sum_{j=0}^{k} (-1)^{k-j} 4^k \binom{k}{j}\binom{n}{k} (b\log(a)+c\log(h))^{-j-k+2n} \left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)^{j+k} \left(-\frac{\left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)^2}{f\log(h)}\right)^{\frac{1}{2}(-j-k-1)} \left(2 f\, \Gamma\left(\frac{1}{2}(j+k+2), -\frac{\left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)^2}{4 f\log(h)}\right) \sqrt{-\frac{\left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)^2}{f\log(h)}}\log(h) + \Gamma\left(\frac{1}{2}(j+k+1), -\frac{\left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)^2}{4 f\log(h)}\right) (b\log(a)+c\log(h))\left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)\right) /; n \in \mathbb{N}$$

Involving $z^n a^{b z^r+e} h^{c z^r+f z}$

01.03.21.0599.01

$$\int z^n a^{b z^2+e} h^{c z^2+f z}\, dz = -\frac{1}{2} a^e e^{-\frac{f^2\log^2(h)}{4(b\log(a)+c\log(h))}} (b\log(a)+c\log(h))^{-n-1} \sum_{j=0}^{n} 2^{j-n}\binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(2 b z\log(a)+(f+2 c z)\log(h))^2}{4(b\log(a)+c\log(h))}\right) (-f\log(h))^{n-j} (2 b z\log(a)+(f+2 c z)\log(h))^{j+1} \left(-\frac{(2 b z\log(a)+(f+2 c z)\log(h))^2}{b\log(a)+c\log(h)}\right)^{\frac{1}{2}(-j-1)} /; n \in \mathbb{N}$$

01.03.21.0600.01

$$\int z^n a^{\sqrt{z}\, b+e} h^{\sqrt{z}\, c+f z}\, dz = 2^{-2n-1} a^e e^{-\frac{(b\log(a)+c\log(h))^2}{4 f\log(h)}} (f\log(h))^{-2(n+1)} \sum_{k=0}^{n}\sum_{j=0}^{k} (-1)^{k-j} 4^k \binom{k}{j}\binom{n}{k} (b\log(a)+c\log(h))^{-j-k+2n} \left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)^{j+k} \left(-\frac{\left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)^2}{f\log(h)}\right)^{\frac{1}{2}(-j-k-1)} \left(2 f\,\Gamma\left(\frac{1}{2}(j+k+2), -\frac{\left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)^2}{4 f\log(h)}\right) \sqrt{-\frac{\left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)^2}{f\log(h)}}\log(h) + \Gamma\left(\frac{1}{2}(j+k+1), -\frac{\left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)^2}{4 f\log(h)}\right) (b\log(a)+c\log(h))\left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)\right) /;\ n\in\mathbb{N}$$

Involving $z^n a^{b z^r+d z} h^{c z^r+f z}$

01.03.21.0601.01

$$\int z^n a^{b z^2+d z} h^{c z^2+f z}\, dz = -\frac{1}{2} e^{-\frac{(d\log(a)+f\log(h))^2}{4(b\log(a)+c\log(h))}} (b\log(a)+c\log(h))^{-n-1} \sum_{j=0}^{n} 2^{j-n}\binom{n}{j}\Gamma\left(\frac{j+1}{2}, -\frac{((d+2 b z)\log(a)+(f+2 c z)\log(h))^2}{4(b\log(a)+c\log(h))}\right)(-d\log(a)-f\log(h))^{n-j} ((d+2 b z)\log(a)+(f+2 c z)\log(h))^{j+1}\left(-\frac{((d+2 b z)\log(a)+(f+2 c z)\log(h))^2}{b\log(a)+c\log(h)}\right)^{\frac{1}{2}(-j-1)} /;\ n\in\mathbb{N}$$

01.03.21.0602.01

$$\int z^n a^{\sqrt{z}\, b+d\, z} h^{\sqrt{z}\, c+f\, z}\, dz = 2^{-2n-1} e^{-\frac{(b\log(a)+c\log(h))^2}{4(d\log(a)+f\log(h))}} (d\log(a)+f\log(h))^{-2(n+1)} \sum_{k=0}^{n}\sum_{j=0}^{k} (-1)^{k-j} 4^k \binom{k}{j}\binom{n}{k} (b\log(a)+c\log(h))^{-j-k+2n} \left(b\log(a)+c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^{j+k} \left(-\frac{\left(b\log(a)+c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{d\log(a)+f\log(h)}\right)^{\frac{1}{2}(-j-k-1)} \left(\Gamma\left(\frac{1}{2}(j+k+1), -\frac{\left(b\log(a)+c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{4(d\log(a)+f\log(h))}\right)(b\log(a)+c\log(h))\left(b\log(a)+c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)+2\,\Gamma\left(\frac{1}{2}(j+k+2), -\frac{\left(b\log(a)+c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{4(d\log(a)+f\log(h))}\right)(d\log(a)+f\log(h))\sqrt{-\frac{\left(b\log(a)+c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{d\log(a)+f\log(h)}}\right) /;\ n\in\mathbb{N}$$

Involving $z^n a^{d\, z} h^{c\, z^r+f\, z+g}$

01.03.21.0603.01

$$\int z^n a^{d\, z} h^{c\, z^2+f\, z+g}\, dz = -\frac{1}{2} e^{-\frac{(d\log(a)+f\log(h))^2}{4c\log(h)}} h^g (c\log(h))^{-n-1} \sum_{j=0}^{n} 2^{j-n}\binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(d\log(a)+(f+2cz)\log(h))^2}{4c\log(h)}\right)(-d\log(a)-f\log(h))^{n-j} (d\log(a)+(f+2cz)\log(h))^{j+1}\left(-\frac{(d\log(a)+(f+2cz)\log(h))^2}{c\log(h)}\right)^{\frac{1}{2}(-j-1)} /;\ n\in\mathbb{N}$$

01.03.21.0604.01

$$\int z^n a^{d z} h^{\sqrt{z}\, c+f z+g}\, dz = 2^{-2n-1} e^{-\frac{c^2 \log^2(h)}{4(d \log(a)+f \log(h))}} h^g (d \log(a) + f \log(h))^{-2(n+1)} \sum_{k=0}^{n} \sum_{j=0}^{k} (-1)^{k-j} 4^k \binom{k}{j} \binom{n}{k} (c \log(h))^{-j-k+2n} \left(c \log(h) + 2\sqrt{z}\, (d \log(a) + f \log(h))\right)^{j+k} \left(-\frac{\left(c \log(h) + 2\sqrt{z}\, (d \log(a) + f \log(h))\right)^2}{d \log(a) + f \log(h)}\right)^{\frac{1}{2}(-j-k-1)} \left(2\,\Gamma\left(\frac{1}{2}(j+k+2), -\frac{\left(c \log(h) + 2\sqrt{z}\, (d \log(a) + f \log(h))\right)^2}{4(d \log(a) + f \log(h))}\right) \sqrt{-\frac{\left(c \log(h) + 2\sqrt{z}\, (d \log(a) + f \log(h))\right)^2}{d \log(a) + f \log(h)}}\, (d \log(a) + f \log(h)) + c\,\Gamma\left(\frac{1}{2}(j+k+1), -\frac{\left(c \log(h) + 2\sqrt{z}\, (d \log(a) + f \log(h))\right)^2}{4(d \log(a) + f \log(h))}\right) \log(h) \left(c \log(h) + 2\sqrt{z}\, (d \log(a) + f \log(h))\right)\right) /;\, n \in \mathbb{N}$$

Involving $z^n a^{d z+e} h^{c z^r+f z+g}$

01.03.21.0605.01

$$\int z^n a^{d z+e} h^{c z^2+f z+g}\, dz = -\frac{1}{2} a^e e^{-\frac{(d \log(a)+f \log(h))^2}{4 c \log(h)}} h^g (c \log(h))^{-n-1} \sum_{j=0}^{n} 2^{j-n} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(d \log(a) + (f + 2 c z) \log(h))^2}{4 c \log(h)}\right) (-d \log(a) - f \log(h))^{n-j} (d \log(a) + (f + 2 c z) \log(h))^{j+1} \left(-\frac{(d \log(a) + (f + 2 c z) \log(h))^2}{c \log(h)}\right)^{\frac{1}{2}(-j-1)} /;\, n \in \mathbb{N}$$

01.03.21.0606.01

$$\int z^n a^{e+d z} h^{\sqrt{z}\, c+f z+g}\, dz = 2^{-2n-1} a^e e^{-\frac{c^2 \log^2(h)}{4(d\log(a)+f\log(h))}} h^g (d\log(a)+f\log(h))^{-2(n+1)} \sum_{k=0}^{n}\sum_{j=0}^{k} (-1)^{k-j} 4^k \binom{k}{j}\binom{n}{k} (c\log(h))^{-j-k+2n} \left(c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^{j+k} \left(-\frac{\left(c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{d\log(a)+f\log(h)}\right)^{\frac{1}{2}(-j-k-1)} \left(2\,\Gamma\left(\frac{1}{2}(j+k+2), -\frac{\left(c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{4(d\log(a)+f\log(h))}\right) \sqrt{-\frac{\left(c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{d\log(a)+f\log(h)}}\,(d\log(a)+f\log(h)) + c\,\Gamma\left(\frac{1}{2}(j+k+1), -\frac{\left(c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{4(d\log(a)+f\log(h))}\right) \log(h) \left(c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)\right) /; n \in \mathbb{N}$$

Involving $z^n a^{b z^r} h^{c z^r + f z + g}$

01.03.21.0607.01

$$\int z^n a^{b z^2} h^{c z^2+f z+g}\, dz = -\frac{1}{2} e^{-\frac{f^2 \log^2(h)}{4(b\log(a)+c\log(h))}} h^g (b\log(a)+c\log(h))^{-n-1} \sum_{j=0}^{n} 2^{j-n} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(2 b z\log(a)+(f+2 c z)\log(h))^2}{4(b\log(a)+c\log(h))}\right) (-f\log(h))^{n-j} (2 b z\log(a)+(f+2 c z)\log(h))^{j+1} \left(-\frac{(2 b z\log(a)+(f+2 c z)\log(h))^2}{b\log(a)+c\log(h)}\right)^{\frac{1}{2}(-j-1)} /; n \in \mathbb{N}$$

01.03.21.0608.01

$$\int z^n a^{\sqrt{z}\, b} h^{\sqrt{z}\, c+f z+g} \, dz = 2^{-2n-1} e^{-\frac{(b\log(a)+c\log(h))^2}{4 f \log(h)}} h^g (f \log(h))^{-2(n+1)} \sum_{k=0}^{n} \sum_{j=0}^{k} (-1)^{k-j} 4^k \binom{k}{j} \binom{n}{k} (b\log(a)+c\log(h))^{-j-k+2n} \left(b\log(a)+c\log(h)+2 f \sqrt{z} \log(h)\right)^{j+k} \left(-\frac{\left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)^2}{f\log(h)}\right)^{\frac{1}{2}(-j-k-1)} \left(2 f \Gamma\left(\frac{1}{2}(j+k+2), -\frac{\left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)^2}{4 f\log(h)}\right) \sqrt{-\frac{\left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)^2}{f\log(h)}} \log(h) + \Gamma\left(\frac{1}{2}(j+k+1), -\frac{\left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)^2}{4 f\log(h)}\right) (b\log(a)+c\log(h)) \left(b\log(a)+c\log(h)+2 f\sqrt{z}\log(h)\right)\right) /; n \in \mathbb{N}$$

Involving $z^n a^{b z^r+e} h^{c z^r+f z+g}$

01.03.21.0609.01

$$\int z^n a^{b z^2+e} h^{c z^2+f z+g} \, dz = -\frac{1}{2} a^e e^{-\frac{f^2 \log^2(h)}{4(b\log(a)+c\log(h))}} h^g (b\log(a)+c\log(h))^{-n-1} \sum_{j=0}^{n} 2^{j-n} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{(2 b z\log(a)+(f+2 c z)\log(h))^2}{4(b\log(a)+c\log(h))}\right) (-f\log(h))^{n-j} (2 b z\log(a)+(f+2 c z)\log(h))^{j+1} \left(-\frac{(2 b z\log(a)+(f+2 c z)\log(h))^2}{b\log(a)+c\log(h)}\right)^{\frac{1}{2}(-j-1)} /; n \in \mathbb{N}$$

01.03.21.0610.01

$$\int z^n a^{\sqrt{z}\, b+e} h^{\sqrt{z}\, c+f z+g} \, dz = 2^{-2n-1} a^e e^{-\frac{(b \log(a)+c \log(h))^2}{4 f \log(h)}} h^g (f \log(h))^{-2(n+1)} \sum_{k=0}^{n} \sum_{j=0}^{k} (-1)^{k-j} 4^k \binom{k}{j} \binom{n}{k} (b \log(a) + c \log(h))^{-j-k+2n} \left(b \log(a) + c \log(h) + 2 f \sqrt{z} \log(h)\right)^{j+k} \left(-\frac{\left(b \log(a) + c \log(h) + 2 f \sqrt{z} \log(h)\right)^2}{f \log(h)}\right)^{\frac{1}{2}(-j-k-1)} \left(2 f \Gamma\left(\frac{1}{2}(j+k+2), -\frac{\left(b \log(a) + c \log(h) + 2 f \sqrt{z} \log(h)\right)^2}{4 f \log(h)}\right) \sqrt{-\frac{\left(b \log(a) + c \log(h) + 2 f \sqrt{z} \log(h)\right)^2}{f \log(h)}} \log(h) + \Gamma\left(\frac{1}{2}(j+k+1), -\frac{\left(b \log(a) + c \log(h) + 2 f \sqrt{z} \log(h)\right)^2}{4 f \log(h)}\right) (b \log(a) + c \log(h)) \left(b \log(a) + c \log(h) + 2 f \sqrt{z} \log(h)\right)\right) /; n \in \mathbb{N}$$

Involving $z^n a^{b z^r + d z} h^{c z^r + f z + g}$

01.03.21.0611.01

$$\int z^n a^{b z^2 + d z} h^{c z^2 + f z + g} \, dz = -\frac{1}{2} e^{-\frac{(d \log(a) + f \log(h))^2}{4 (b \log(a) + c \log(h))}} h^g (b \log(a) + c \log(h))^{-n-1} \sum_{j=0}^{n} 2^{j-n} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{((d + 2 b z) \log(a) + (f + 2 c z) \log(h))^2}{4 (b \log(a) + c \log(h))}\right) (-d \log(a) - f \log(h))^{n-j} ((d + 2 b z) \log(a) + (f + 2 c z) \log(h))^{j+1} \left(-\frac{((d + 2 b z) \log(a) + (f + 2 c z) \log(h))^2}{b \log(a) + c \log(h)}\right)^{\frac{1}{2}(-j-1)} /; n \in \mathbb{N}$$

01.03.21.0612.01

$$\int z^n a^{\sqrt{z}\, b+d\, z} h^{\sqrt{z}\, c+f\, z+g}\, dz = 2^{-2n-1} e^{-\frac{(b \log(a)+c \log(h))^2}{4 (d \log(a)+f \log(h))}} h^g (d \log(a) + f \log(h))^{-2(n+1)} \sum_{k=0}^{n} \sum_{j=0}^{k} (-1)^{k-j} 4^k \binom{k}{j} \binom{n}{k} (b \log(a) + c \log(h))^{-j-k+2n} \left(b \log(a) + c \log(h) + 2\sqrt{z}\, (d \log(a) + f \log(h))\right)^{j+k} \left(-\frac{\left(b \log(a) + c \log(h) + 2\sqrt{z}\, (d \log(a) + f \log(h))\right)^2}{d \log(a) + f \log(h)}\right)^{\frac{1}{2}(-j-k-1)} \left(\Gamma\left(\frac{1}{2}(j+k+1), -\frac{\left(b \log(a) + c \log(h) + 2\sqrt{z}\, (d \log(a) + f \log(h))\right)^2}{4 (d \log(a) + f \log(h))}\right) (b \log(a) + c \log(h)) \left(b \log(a) + c \log(h) + 2\sqrt{z}\, (d \log(a) + f \log(h))\right) + 2\, \Gamma\left(\frac{1}{2}(j+k+2), -\frac{\left(b \log(a) + c \log(h) + 2\sqrt{z}\, (d \log(a) + f \log(h))\right)^2}{4 (d \log(a) + f \log(h))}\right) (d \log(a) + f \log(h)) \sqrt{-\frac{\left(b \log(a) + c \log(h) + 2\sqrt{z}\, (d \log(a) + f \log(h))\right)^2}{d \log(a) + f \log(h)}}\right) /;\ n \in \mathbb{N}$$

Involving $z^n a^{b z^r + d z + e} h^{c z^r + f z + g}$

01.03.21.0613.01

$$\int z^n a^{b z^2 + d z + e} h^{c z^2 + f z + g}\, dz = -\frac{1}{2} a^e e^{-\frac{(d \log(a)+f \log(h))^2}{4 (b \log(a)+c \log(h))}} h^g (b \log(a) + c \log(h))^{-n-1} \sum_{j=0}^{n} 2^{j-n} \binom{n}{j} \Gamma\left(\frac{j+1}{2}, -\frac{((d + 2 b z) \log(a) + (f + 2 c z) \log(h))^2}{4 (b \log(a) + c \log(h))}\right) (-d \log(a) - f \log(h))^{n-j} ((d + 2 b z) \log(a) + (f + 2 c z) \log(h))^{j+1} \left(-\frac{((d + 2 b z) \log(a) + (f + 2 c z) \log(h))^2}{b \log(a) + c \log(h)}\right)^{\frac{1}{2}(-j-1)} /;\ n \in \mathbb{N}$$

01.03.21.0614.01

$$\int z^n a^{\sqrt{z}\, b+d z+e} h^{\sqrt{z}\, c+f z+g} \, dz = 2^{-2n-1} a^e e^{-\frac{(b\log(a)+c\log(h))^2}{4(d\log(a)+f\log(h))}} h^g (d\log(a)+f\log(h))^{-2(n+1)} \sum_{k=0}^{n}\sum_{j=0}^{k} (-1)^{k-j} 4^k \binom{k}{j}\binom{n}{k} (b\log(a)+c\log(h))^{-j-k+2n} \left(b\log(a)+c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^{j+k} \left(-\frac{\left(b\log(a)+c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{d\log(a)+f\log(h)}\right)^{\frac{1}{2}(-j-k-1)} \left(\Gamma\left(\frac{1}{2}(j+k+1), -\frac{\left(b\log(a)+c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{4(d\log(a)+f\log(h))}\right)(b\log(a)+c\log(h))\left(b\log(a)+c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)+2\,\Gamma\left(\frac{1}{2}(j+k+2), -\frac{\left(b\log(a)+c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{4(d\log(a)+f\log(h))}\right)(d\log(a)+f\log(h))\sqrt{-\frac{\left(b\log(a)+c\log(h)+2\sqrt{z}\,(d\log(a)+f\log(h))\right)^2}{d\log(a)+f\log(h)}}\right) /;\, n \in \mathbb{N}$$

Involving products of powers of the direct function and a power function

Involving product of power of the direct function, the direct function and a power function

Involving $z^{\alpha-1} e^{c z} \left(e^{a z}\right)^{\nu}$

01.03.21.0615.01

$$\int z^{\alpha-1} e^{c z} (e^{a z})^{\nu} \, dz = -e^{-a z \nu} (e^{a z})^{\nu} z^{\alpha} (-z(c+a\nu))^{-\alpha}\, \Gamma(\alpha, -z(c+a\nu))$$

01.03.21.0616.01

$$\int z^n e^{c z} (e^{a z})^{\nu} \, dz = -e^{-a z \nu} (e^{a z})^{\nu} z^{n+1} (-z(c+a\nu))^{-n-1}\, \Gamma(n+1, -z(c+a\nu)) /;\, n \in \mathbb{Z}$$

01.03.21.0617.01

$$\int z^n e^{c z} (e^{a z})^{\nu} \, dz = -e^{-a z \nu} (e^{a z})^{\nu} z^{n+1} (-z(c+a\nu))^{-n-1} \left(\frac{(-1)^n \operatorname{Ei}(z(c+a\nu))}{(-n-1)!} + e^{z(c+a\nu)} \sum_{j=0}^{n} \frac{(-z(c+a\nu))^j}{(n+1)_{j-n}} - e^{z(c+a\nu)} \sum_{j=n+1}^{-1} \frac{(-z(c+a\nu))^j}{(n+1)_{j-n}}\right) /;\, n \in \mathbb{Z}$$

01.03.21.0618.01

$$\int z^{n+\frac{1}{2}} e^{c z} (e^{a z})^{\nu} \, dz = -e^{-a z \nu} (e^{a z})^{\nu} z^{n+\frac{3}{2}} (-z (c + a \nu))^{-n-\frac{3}{2}} \left(\operatorname{erfc}\left(\sqrt{-z (c + a \nu)}\right) \Gamma\left(n + \frac{3}{2}\right) + e^{z (c+a \nu)} \sum_{j=0}^{n} \frac{(-z (c + a \nu))^{j+\frac{1}{2}}}{\left(n + \frac{3}{2}\right)_{j-n}} - e^{z (c+a \nu)} \sum_{j=n+1}^{-1} \frac{(-z (c + a \nu))^{j+\frac{1}{2}}}{\left(n + \frac{3}{2}\right)_{j-n}} \right) /; n \in \mathbb{Z}$$

Involving $z^{\alpha-1} e^{c z+d} \left(e^{a z}\right)^{\nu}$

01.03.21.0619.01

$$\int z^{\alpha-1} e^{d+c z} (e^{a z})^{\nu} \, dz = -e^{d-a z \nu} (e^{a z})^{\nu} z^{\alpha} (-z (c + a \nu))^{-\alpha} \Gamma(\alpha, -z (c + a \nu))$$

01.03.21.0620.01

$$\int z^{n} e^{c z+d} (e^{a z})^{\nu} \, dz = -e^{d-a z \nu} (e^{a z})^{\nu} z^{n+1} (-z (c + a \nu))^{-n-1} \Gamma(n + 1, -z (c + a \nu)) /; n \in \mathbb{Z}$$

01.03.21.0621.01

$$\int z^{n} e^{c z+d} (e^{a z})^{\nu} \, dz = -e^{d-a z \nu} (e^{a z})^{\nu} z^{n+1} (-z (c + a \nu))^{-n-1} \left(\frac{(-1)^{n} \operatorname{Ei}(z (c + a \nu))}{(-n-1)!} + e^{z (c+a \nu)} \sum_{j=0}^{n} \frac{(-z (c + a \nu))^{j}}{(n + 1)_{j-n}} - e^{z (c+a \nu)} \sum_{j=n+1}^{-1} \frac{(-z (c + a \nu))^{j}}{(n + 1)_{j-n}} \right) /; n \in \mathbb{Z}$$

01.03.21.0622.01

$$\int z^{n+\frac{1}{2}} e^{c z+d} (e^{a z})^{\nu} \, dz = -e^{d-a z \nu} (e^{a z})^{\nu} z^{n+\frac{3}{2}} (-z (c + a \nu))^{-n-\frac{3}{2}} \left(\operatorname{erfc}\left(\sqrt{-z (c + a \nu)}\right) \Gamma\left(n + \frac{3}{2}\right) + e^{z (c+a \nu)} \sum_{j=0}^{n} \frac{(-z (c + a \nu))^{j+\frac{1}{2}}}{\left(n + \frac{3}{2}\right)_{j-n}} - e^{z (c+a \nu)} \sum_{j=n+1}^{-1} \frac{(-z (c + a \nu))^{j+\frac{1}{2}}}{\left(n + \frac{3}{2}\right)_{j-n}} \right) /; n \in \mathbb{Z}$$

Involving $z^{\alpha-1} e^{c z} \left(e^{a z+b}\right)^{\nu}$

01.03.21.0623.01

$$\int z^{\alpha-1} e^{c z} \left(e^{b+a z}\right)^{\nu} \, dz = -e^{-a z \nu} \left(e^{b+a z}\right)^{\nu} z^{\alpha} (-z (c + a \nu))^{-\alpha} \Gamma(\alpha, -z (c + a \nu))$$

01.03.21.0624.01

$$\int z^{n} e^{c z} \left(e^{b+a z}\right)^{\nu} \, dz = -e^{-a z \nu} \left(e^{b+a z}\right)^{\nu} z^{n+1} (-z (c + a \nu))^{-n-1} \Gamma(n + 1, -z (c + a \nu)) /; n \in \mathbb{Z}$$

01.03.21.0625.01

$$\int z^{n} e^{c z} \left(e^{a z+b}\right)^{\nu} \, dz = -e^{-a z \nu} \left(e^{b+a z}\right)^{\nu} z^{n+1} (-z (c + a \nu))^{-n-1} \left(\frac{(-1)^{n} \operatorname{Ei}(z (c + a \nu))}{(-n-1)!} + e^{z (c+a \nu)} \sum_{j=0}^{n} \frac{(-z (c + a \nu))^{j}}{(n + 1)_{j-n}} - e^{z (c+a \nu)} \sum_{j=n+1}^{-1} \frac{(-z (c + a \nu))^{j}}{(n + 1)_{j-n}} \right) /; n \in \mathbb{Z}$$

01.03.21.0626.01

$$\int z^{n+\frac{1}{2}} e^{c z} \left(e^{a z+b}\right)^{\nu} dz = -e^{-a z \nu} \left(e^{b+a z}\right)^{\nu} z^{n+\frac{3}{2}} (-z (c+a \nu))^{-n-\frac{3}{2}} \left(\operatorname{erfc}\left(\sqrt{-z (c+a \nu)}\right) \Gamma\left(n+\frac{3}{2}\right) + e^{z (c+a \nu)} \sum_{j=0}^{n} \frac{(-z (c+a \nu))^{j+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{j-n}} - e^{z (c+a \nu)} \sum_{j=n+1}^{-1} \frac{(-z (c+a \nu))^{j+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{j-n}}\right) /; n \in \mathbb{Z}$$

Involving $z^{\alpha-1} e^{c z+d} \left(e^{a z+b}\right)^{\nu}$

01.03.21.0627.01

$$\int z^{\alpha-1} e^{d+c z} \left(e^{b+a z}\right)^{\nu} dz = -e^{d-a z \nu} \left(e^{b+a z}\right)^{\nu} z^{\alpha} (-z (c+a \nu))^{-\alpha} \Gamma(\alpha, -z (c+a \nu))$$

01.03.21.0628.01

$$\int z^{n} e^{c z+d} \left(e^{a z+b}\right)^{\nu} dz = -e^{d-a z \nu} \left(e^{b+a z}\right)^{\nu} z^{n+1} (-z (c+a \nu))^{-n-1} \Gamma(n+1, -z (c+a \nu)) /; n \in \mathbb{Z}$$

01.03.21.0629.01

$$\int z^{n} e^{c z+d} \left(e^{a z+b}\right)^{\nu} dz = -e^{d-a z \nu} \left(e^{b+a z}\right)^{\nu} z^{n+1} (-z (c+a \nu))^{-n-1} \left(\frac{(-1)^{n} \operatorname{Ei}(z (c+a \nu))}{(-n-1)!} + e^{z (c+a \nu)} \sum_{j=0}^{n} \frac{(-z (c+a \nu))^{j}}{(n+1)_{j-n}} - e^{z (c+a \nu)} \sum_{j=n+1}^{-1} \frac{(-z (c+a \nu))^{j}}{(n+1)_{j-n}}\right) /; n \in \mathbb{Z}$$

01.03.21.0630.01

$$\int z^{n+\frac{1}{2}} e^{c z+d} \left(e^{a z+b}\right)^{\nu} dz = -e^{d-a z \nu} \left(e^{b+a z}\right)^{\nu} z^{n+\frac{3}{2}} (-z (c+a \nu))^{-n-\frac{3}{2}} \left(\operatorname{erfc}\left(\sqrt{-z (c+a \nu)}\right) \Gamma\left(n+\frac{3}{2}\right) + e^{z (c+a \nu)} \sum_{j=0}^{n} \frac{(-z (c+a \nu))^{j+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{j-n}} - e^{z (c+a \nu)} \sum_{j=n+1}^{-1} \frac{(-z (c+a \nu))^{j+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{j-n}}\right) /; n \in \mathbb{Z}$$

Involving $z^{n} e^{b z^{r}} \left(e^{c z}\right)^{\nu}$

01.03.21.0631.01

$$\int z^{n} e^{b z^{2}} \left(e^{c z}\right)^{\nu} dz = -\frac{1}{2 \sqrt{b}} \left(e^{-\frac{c \nu (4 b z+c \nu)}{4 b}} \left(e^{c z}\right)^{\nu} \sum_{q=0}^{n} 2^{q-n} b^{-n-\frac{1}{2}} (-c \nu)^{n-q} (2 b z+c \nu)^{q+1} \left(-\frac{(2 b z+c \nu)^{2}}{b}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(2 b z+c \nu)^{2}}{4 b}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0632.01

$$\int z^n e^{\sqrt{z}\, b} (e^{c z})^{\nu} \, dz = 2^{-2n-1} e^{-\frac{b^2}{4 c \nu}-c z \nu} (e^{c z})^{\nu} (c \nu)^{-2(n+1)} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k b^{-h-k+2n} \left(b+2c\sqrt{z}\,\nu\right)^{h+k} \left(-\frac{\left(b+2c\sqrt{z}\,\nu\right)^2}{c\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left(b\left(b+2c\sqrt{z}\,\nu\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+2c\sqrt{z}\,\nu\right)^2}{4c\nu}\right) + 2c\nu\sqrt{-\frac{\left(b+2c\sqrt{z}\,\nu\right)^2}{c\nu}}\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+2c\sqrt{z}\,\nu\right)^2}{4c\nu}\right)\right) /;\, n \in \mathbb{N}$$

Involving $z^n e^{b z^r+e}\left(e^{c z}\right)^{\nu}$

01.03.21.0633.01

$$\int z^n e^{b z^2+e} (e^{c z})^{\nu} \, dz = -\frac{1}{2\sqrt{b}} \left(e^{e-\frac{c\nu(4bz+c\nu)}{4b}} (e^{c z})^{\nu} \sum_{q=0}^{n} 2^{q-n} b^{-n-\frac{1}{2}} (-c\nu)^{n-q} (2bz+c\nu)^{q+1} \left(-\frac{(2bz+c\nu)^2}{b}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(2bz+c\nu)^2}{4b}\right)\right) /;\, n \in \mathbb{N}$$

01.03.21.0634.01

$$\int z^n e^{\sqrt{z}\, b+e} (e^{c z})^{\nu} \, dz = 2^{-2n-1} e^{-\frac{b^2}{4 c \nu}+e-c z \nu} (e^{c z})^{\nu} (c \nu)^{-2(n+1)} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k b^{-h-k+2n} \left(b+2c\sqrt{z}\,\nu\right)^{h+k} \left(-\frac{\left(b+2c\sqrt{z}\,\nu\right)^2}{c\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left(b\left(b+2c\sqrt{z}\,\nu\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+2c\sqrt{z}\,\nu\right)^2}{4c\nu}\right) + 2c\nu\sqrt{-\frac{\left(b+2c\sqrt{z}\,\nu\right)^2}{c\nu}}\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+2c\sqrt{z}\,\nu\right)^2}{4c\nu}\right)\right) /;\, n \in \mathbb{N}$$

Involving $z^n e^{b z^r+d z}\left(e^{c z}\right)^{\nu}$

01.03.21.0635.01

$$\int z^n e^{b z^2+d z} (e^{c z})^{\nu} \, dz = -\frac{1}{2\sqrt{b}} \left(e^{-\frac{(d+c\nu)^2}{4b}-c z \nu} (e^{c z})^{\nu} \sum_{q=0}^{n} 2^{q-n} b^{-n-\frac{1}{2}} (-d-c\nu)^{n-q} (d+2bz+c\nu)^{q+1} \left(-\frac{(d+2bz+c\nu)^2}{b}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d+2bz+c\nu)^2}{4b}\right)\right) /;\, n \in \mathbb{N}$$

01.03.21.0636.01

$$\int z^n e^{\sqrt{z}\, b+d\, z} (e^{c\, z})^\nu \, dz = 2^{-2\, n-1} e^{-\frac{b^2}{4\, (d+c\, \nu)}-c\, z\, \nu} (e^{c\, z})^\nu (d+c\, \nu)^{-2\, (n+1)} \sum_{k=0}^n \sum_{h=0}^k (-1)^{k-h} 4^k b^{-h-k+2\, n} \left(b+2\sqrt{z}\, (d+c\, \nu)\right)^{h+k} \left(-\frac{\left(b+2\sqrt{z}\, (d+c\, \nu)\right)^2}{d+c\, \nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left(b\left(b+2\sqrt{z}\, (d+c\, \nu)\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+2\sqrt{z}\, (d+c\, \nu)\right)^2}{4\, (d+c\, \nu)}\right)+ 2\sqrt{-\frac{\left(b+2\sqrt{z}\, (d+c\, \nu)\right)^2}{d+c\, \nu}}\, (d+c\, \nu)\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+2\sqrt{z}\, (d+c\, \nu)\right)^2}{4\, (d+c\, \nu)}\right)\right) /;\, n\in \mathbb{N}$$

Involving $z^n e^{b\, z^r+d\, z+e} \left(e^{c\, z}\right)^\nu$

01.03.21.0637.01

$$\int z^n e^{b\, z^2+d\, z+e} (e^{c\, z})^\nu \, dz = -\frac{1}{2\sqrt{b}} \left(e^{-\frac{(d+c\, \nu)^2}{4\, b}+e-c\, z\, \nu} (e^{c\, z})^\nu \sum_{q=0}^n 2^{q-n} b^{-n-\frac{1}{2}} (-d-c\, \nu)^{n-q} (d+2\, b\, z+c\, \nu)^{q+1} \left(-\frac{(d+2\, b\, z+c\, \nu)^2}{b}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d+2\, b\, z+c\, \nu)^2}{4\, b}\right)\right) /;\, n\in \mathbb{N}$$

01.03.21.0638.01

$$\int z^n e^{\sqrt{z}\, b+d\, z+e} (e^{c\, z})^\nu \, dz = 2^{-2\, n-1} e^{-\frac{b^2}{4\, (d+c\, \nu)}+e-c\, z\, \nu} (e^{c\, z})^\nu (d+c\, \nu)^{-2\, (n+1)} \sum_{k=0}^n \sum_{h=0}^k (-1)^{k-h} 4^k b^{-h-k+2\, n} \left(b+2\sqrt{z}\, (d+c\, \nu)\right)^{h+k} \left(-\frac{\left(b+2\sqrt{z}\, (d+c\, \nu)\right)^2}{d+c\, \nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left(b\left(b+2\sqrt{z}\, (d+c\, \nu)\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+2\sqrt{z}\, (d+c\, \nu)\right)^2}{4\, (d+c\, \nu)}\right)+ 2\sqrt{-\frac{\left(b+2\sqrt{z}\, (d+c\, \nu)\right)^2}{d+c\, \nu}}\, (d+c\, \nu)\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+2\sqrt{z}\, (d+c\, \nu)\right)^2}{4\, (d+c\, \nu)}\right)\right) /;\, n\in \mathbb{N}$$

Involving $z^n e^{b z^r} \left(e^{f z+g}\right)^\nu$

01.03.21.0639.01

$$\int z^n e^{b z^2} \left(e^{g+f z}\right)^\nu dz = -\frac{1}{2\sqrt{b}} e^{-\frac{f \nu (4 b z+f \nu)}{4 b}} \left(e^{g+f z}\right)^\nu \sum_{q=0}^{n} 2^{q-n} b^{-n-\frac{1}{2}} (-f \nu)^{n-q} (2 b z+f \nu)^{q+1} \left(-\frac{(2 b z+f \nu)^2}{b}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(2 b z+f \nu)^2}{4 b}\right) /; n \in \mathbb{N}$$

01.03.21.0640.01

$$\int z^n e^{\sqrt{z}\, b} \left(e^{f z+g}\right)^\nu dz = 2^{-2 n-1} e^{-\frac{b^2}{4 f \nu}-f z \nu} \left(e^{g+f z}\right)^\nu (f \nu)^{-2(n+1)} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k b^{-h-k+2 n} \left(b+2 f \sqrt{z}\, \nu\right)^{h+k} \left(-\frac{\left(b+2 f \sqrt{z}\, \nu\right)^2}{f \nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h} \binom{n}{k} \left(b \left(b+2 f \sqrt{z}\, \nu\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+2 f \sqrt{z}\, \nu\right)^2}{4 f \nu}\right) + 2 f \nu \sqrt{-\frac{\left(b+2 f \sqrt{z}\, \nu\right)^2}{f \nu}}\; \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+2 f \sqrt{z}\, \nu\right)^2}{4 f \nu}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n e^{b z^r+e} \left(e^{f z+g}\right)^\nu$

01.03.21.0641.01

$$\int z^n e^{b z^2+e} \left(e^{f z+g}\right)^\nu dz = -\frac{1}{2\sqrt{b}} \left(e^{e-\frac{f \nu (4 b z+f \nu)}{4 b}} \left(e^{g+f z}\right)^\nu \sum_{q=0}^{n} 2^{q-n} b^{-n-\frac{1}{2}} (-f \nu)^{n-q} (2 b z+f \nu)^{q+1} \left(-\frac{(2 b z+f \nu)^2}{b}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(2 b z+f \nu)^2}{4 b}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0642.01

$$\int z^n e^{\sqrt{z}\, b+e} \left(e^{f z+g}\right)^\nu dz = 2^{-2n-1} e^{-\frac{b^2}{4 f \nu}+e-f z \nu} \left(e^{g+f z}\right)^\nu (f \nu)^{-2(n+1)} \sum_{k=0}^n \sum_{h=0}^k (-1)^{k-h} 4^k b^{-h-k+2n} \left(b+2 f \sqrt{z}\, \nu\right)^{h+k} \left(-\frac{\left(b+2 f \sqrt{z}\, \nu\right)^2}{f \nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left(b \left(b+2 f \sqrt{z}\, \nu\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+2 f \sqrt{z}\, \nu\right)^2}{4 f \nu}\right) + 2 f \nu \sqrt{-\frac{\left(b+2 f \sqrt{z}\, \nu\right)^2}{f \nu}}\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+2 f \sqrt{z}\, \nu\right)^2}{4 f \nu}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n e^{b z^r+d z}\left(e^{f z+g}\right)^\nu$

01.03.21.0643.01

$$\int z^n e^{b z^2+d z} \left(e^{f z+g}\right)^\nu dz = -\frac{1}{2\sqrt{b}} \left(e^{-\frac{(d+f \nu)^2}{4 b}-f z \nu} \left(e^{g+f z}\right)^\nu \sum_{q=0}^n 2^{q-n} b^{-n-\frac{1}{2}} (-d-f \nu)^{n-q} (d+2 b z+f \nu)^{q+1} \left(-\frac{(d+2 b z+f \nu)^2}{b}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d+2 b z+f \nu)^2}{4 b}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0644.01

$$\int z^n e^{\sqrt{z}\, b+d z} \left(e^{f z+g}\right)^\nu dz = 2^{-2n-1} e^{-\frac{b^2}{4(d+f \nu)}-f z \nu} \left(e^{g+f z}\right)^\nu (d+f \nu)^{-2(n+1)} \sum_{k=0}^n \sum_{h=0}^k (-1)^{k-h} 4^k b^{-h-k+2n} \left(b+2\sqrt{z}\,(d+f \nu)\right)^{h+k} \left(-\frac{\left(b+2\sqrt{z}\,(d+f \nu)\right)^2}{d+f \nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left(b\left(b+2\sqrt{z}\,(d+f \nu)\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+2\sqrt{z}\,(d+f \nu)\right)^2}{4(d+f \nu)}\right) + 2\sqrt{-\frac{\left(b+2\sqrt{z}\,(d+f \nu)\right)^2}{d+f \nu}}\,(d+f \nu)\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+2\sqrt{z}\,(d+f \nu)\right)^2}{4(d+f \nu)}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n e^{b z^r+d z+e}\left(e^{f z+g}\right)^\nu$

01.03.21.0645.01

$$\int z^n e^{b z^2+d z+e} \left(e^{f z+g}\right)^\nu \, dz = -\frac{1}{2\sqrt{b}} \left(e^{-\frac{(d+f\nu)^2}{4b}+e-f z \nu} \left(e^{g+f z}\right)^\nu \sum_{q=0}^{n} 2^{q-n} b^{-n-\frac{1}{2}} (-d-f\nu)^{n-q} (d+2 b z+f\nu)^{q+1} \left(-\frac{(d+2 b z+f\nu)^2}{b}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d+2 b z+f\nu)^2}{4b}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0646.01

$$\int z^n e^{\sqrt{z}\, b+d z+e} \left(e^{f z+g}\right)^\nu \, dz = 2^{-2n-1} e^{-\frac{b^2}{4(d+f\nu)}+e-f z \nu} \left(e^{g+f z}\right)^\nu (d+f\nu)^{-2(n+1)} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k b^{-h-k+2n} \left(b+2\sqrt{z}\,(d+f\nu)\right)^{h+k} \left(-\frac{\left(b+2\sqrt{z}\,(d+f\nu)\right)^2}{d+f\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left(b\left(b+2\sqrt{z}\,(d+f\nu)\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+2\sqrt{z}\,(d+f\nu)\right)^2}{4(d+f\nu)}\right) + 2\sqrt{-\frac{\left(b+2\sqrt{z}\,(d+f\nu)\right)^2}{d+f\nu}}\,(d+f\nu)\,\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+2\sqrt{z}\,(d+f\nu)\right)^2}{4(d+f\nu)}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n e^{b z}\left(e^{c z^r}\right)^\nu$

01.03.21.0647.01

$$\int z^n e^{b z} \left(e^{c z^2}\right)^\nu \, dz = -\frac{1}{2\sqrt{c\nu}} \left(e^{-\frac{b^2}{4c\nu}-c z^2 \nu} \left(e^{c z^2}\right)^\nu \sum_{q=0}^{n} 2^{q-n} (-b)^{n-q} (c\nu)^{-n-\frac{1}{2}} (b+2 c z \nu)^{q+1} \left(-\frac{(b+2 c z \nu)^2}{c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(b+2 c z\nu)^2}{4c\nu}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0648.01

$$\int z^n e^{b z} \left(e^{\sqrt{z}\, c}\right)^{\nu} dz = 2^{-2n-1} b^{-2(n+1)} e^{-\frac{c \nu \left(4\sqrt{z}\, b + c \nu\right)}{4b}} \left(e^{c\sqrt{z}}\right)^{\nu} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k (c\nu)^{-h-k+2n} \left(2\sqrt{z}\, b + c\nu\right)^{h+k} \left(-\frac{\left(2\sqrt{z}\, b + c\nu\right)^2}{b}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h} \binom{n}{k} \left(c\nu\left(2\sqrt{z}\, b + c\nu\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(2\sqrt{z}\, b + c\nu\right)^2}{4b}\right) + 2\sqrt{-\frac{\left(2\sqrt{z}\, b + c\nu\right)^2}{b}}\; b\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(2\sqrt{z}\, b + c\nu\right)^2}{4b}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n e^{d z + e} \left(e^{c z^r}\right)^{\nu}$

01.03.21.0649.01

$$\int z^n e^{d z + e} \left(e^{c z^2}\right)^{\nu} dz = -\frac{1}{2\sqrt{c\nu}} \left(e^{-\frac{d^2}{4 c \nu} + e - c z^2 \nu} \left(e^{c z^2}\right)^{\nu} \sum_{q=0}^{n} 2^{q-n} (-d)^{n-q} (c\nu)^{-n-\frac{1}{2}} (d + 2 c z \nu)^{q+1} \left(-\frac{(d + 2 c z \nu)^2}{c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d + 2 c z \nu)^2}{4 c \nu}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0650.01

$$\int z^n e^{d z + e} \left(e^{\sqrt{z}\, c}\right)^{\nu} dz = 2^{-2n-1} d^{-2(n+1)} e^{e-\frac{c\nu\left(4\sqrt{z}\, d + c\nu\right)}{4d}} \left(e^{c\sqrt{z}}\right)^{\nu} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k (c\nu)^{-h-k+2n} \left(2\sqrt{z}\, d + c\nu\right)^{h+k} \left(-\frac{\left(2\sqrt{z}\, d + c\nu\right)^2}{d}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h} \binom{n}{k} \left(c\nu\left(2\sqrt{z}\, d + c\nu\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(2\sqrt{z}\, d + c\nu\right)^2}{4d}\right) + 2\sqrt{-\frac{\left(2\sqrt{z}\, d + c\nu\right)^2}{d}}\; d\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(2\sqrt{z}\, d + c\nu\right)^2}{4d}\right)\right) /; n \in \mathbb{N}$$

Involving $z^{\alpha-1} e^{b z^r} \left(e^{c z^r}\right)^{\nu}$

01.03.21.0651.01

$$\int z^{\alpha-1} e^{b z^r} \left(e^{c z^r}\right)^{\nu} dz = -\frac{e^{-c \nu z^r} \left(e^{c z^r}\right)^{\nu} z^{\alpha} \left(-z^r (b + c\nu)\right)^{-\frac{\alpha}{r}} \Gamma\left(\frac{\alpha}{r}, -z^r (b + c\nu)\right)}{r}$$

01.03.21.0652.01

$$\int z^n e^{b z^2} \left(e^{c z^2}\right)^{\nu} dz = -\frac{1}{2} e^{-c z^2 \nu} \left(e^{c z^2}\right)^{\nu} z^{n+1} \left(-z^2 (b + c\nu)\right)^{\frac{1}{2}(-n-1)} \Gamma\left(\frac{n+1}{2}, -z^2 (b + c\nu)\right) /; n \in \mathbb{Z}$$

01.03.21.0653.01

$$\int z^{2n} e^{b z^2} \left(e^{c z^2}\right)^{\nu} dz = -\frac{1}{2} e^{-c z^2 \nu} \left(e^{c z^2}\right)^{\nu} z^{2n+1} \left(-z^2 (b + c\nu)\right)^{-n-\frac{1}{2}} \left(\operatorname{erfc}\left(\sqrt{-z^2 (b+c\nu)}\right) \Gamma\left(n+\frac{1}{2}\right) + e^{z^2 (b+c\nu)} \sum_{j=0}^{n-1} \frac{\left(-z^2 (b+c\nu)\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} - e^{z^2 (b+c\nu)} \sum_{j=n}^{-1} \frac{\left(-z^2 (b+c\nu)\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}}\right) /; n \in \mathbb{Z}$$

01.03.21.0654.01

$$\int z^{2n+1} e^{b z^2} \left(e^{c z^2}\right)^{\nu} dz = -\frac{1}{2} e^{-c z^2 \nu} \left(e^{c z^2}\right)^{\nu} (-(b+c\nu))^{-n-1} \left(\frac{(-1)^n \operatorname{Ei}\left(z^2 (b+c\nu)\right)}{(-n-1)!} + e^{z^2 (b+c\nu)} \sum_{j=0}^{n} \frac{\left(-z^2 (b+c\nu)\right)^{j}}{(n+1)_{j-n}} - e^{z^2 (b+c\nu)} \sum_{j=n+1}^{-1} \frac{\left(-z^2 (b+c\nu)\right)^{j}}{(n+1)_{j-n}}\right) /; n \in \mathbb{Z}$$

01.03.21.0655.01

$$\int z^n e^{b\sqrt{z}} \left(e^{c\sqrt{z}}\right)^{\nu} dz = -\left(2 e^{-c\sqrt{z}\,\nu} \left(e^{c\sqrt{z}}\right)^{\nu} (b+c\nu)^{-2n-2}\, \Gamma\left(2(n+1), -\sqrt{z}\,(b+c\nu)\right)\right) /; n \in \mathbb{Z}$$

01.03.21.0656.01

$$\int z^n e^{\sqrt{z}\, b} \left(e^{\sqrt{z}\, c}\right)^{\nu} dz = -2 e^{-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, c}\right)^{\nu} (b+c\nu)^{-2(n+1)} \left(-\frac{\operatorname{Ei}\left(\sqrt{z}\,(b+c\nu)\right)}{(-2(n+1))!} + e^{\sqrt{z}\,(b+c\nu)} \sum_{j=0}^{2n+1} \frac{\left(-\sqrt{z}\,(b+c\nu)\right)^{j}}{(2(n+1))_{j-2n-1}} - e^{\sqrt{z}\,(b+c\nu)} \sum_{j=2(n+1)}^{-1} \frac{\left(-\sqrt{z}\,(b+c\nu)\right)^{j}}{(2(n+1))_{j-2n-1}}\right) /; n \in \mathbb{Z}$$

Involving $z^{\alpha-1} e^{b z^r + e} \left(e^{c z^r}\right)^{\nu}$

01.03.21.0657.01

$$\int z^{\alpha-1} e^{b z^r + e} \left(e^{c z^r}\right)^{\nu} dz = -\frac{e^{e-c\nu z^r} \left(e^{c z^r}\right)^{\nu} z^{\alpha} \left(-z^r (b+c\nu)\right)^{-\frac{\alpha}{r}} \Gamma\left(\frac{\alpha}{r}, -z^r (b+c\nu)\right)}{r}$$

01.03.21.0658.01

$$\int z^n e^{b z^2 + e} \left(e^{c z^2}\right)^{\nu} dz = -\frac{1}{2} e^{e-c z^2 \nu} \left(e^{c z^2}\right)^{\nu} z^{n+1} \left(-z^2 (b+c\nu)\right)^{\frac{1}{2}(-n-1)} \Gamma\left(\frac{n+1}{2}, -z^2 (b+c\nu)\right) /; n \in \mathbb{Z}$$

01.03.21.0659.01

$$\int z^{2n} e^{b z^2 + e} \left(e^{c z^2}\right)^{\nu} dz = -\frac{1}{2} e^{e-c z^2 \nu} \left(e^{c z^2}\right)^{\nu} z^{2n+1} \left(-z^2 (b+c\nu)\right)^{-n-\frac{1}{2}} \left(\operatorname{erfc}\left(\sqrt{-z^2 (b+c\nu)}\right) \Gamma\left(n+\frac{1}{2}\right) + e^{z^2 (b+c\nu)} \sum_{j=0}^{n-1} \frac{\left(-z^2 (b+c\nu)\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} - e^{z^2 (b+c\nu)} \sum_{j=n}^{-1} \frac{\left(-z^2 (b+c\nu)\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}}\right) /; n \in \mathbb{Z}$$

01.03.21.0660.01

$$\int z^{2n+1} e^{b z^2 + e} \left(e^{c z^2}\right)^{\nu} dz = -\frac{1}{2} e^{e-c z^2 \nu} \left(e^{c z^2}\right)^{\nu} (-(b+c\nu))^{-n-1} \left(\frac{(-1)^n \operatorname{Ei}\left(z^2 (b+c\nu)\right)}{(-n-1)!} + e^{z^2 (b+c\nu)} \sum_{j=0}^{n} \frac{\left(-z^2 (b+c\nu)\right)^{j}}{(n+1)_{j-n}} - e^{z^2 (b+c\nu)} \sum_{j=n+1}^{-1} \frac{\left(-z^2 (b+c\nu)\right)^{j}}{(n+1)_{j-n}}\right) /; n \in \mathbb{Z}$$

01.03.21.0661.01

$$\int z^n e^{\sqrt{z}\, b+e} \left(e^{c\sqrt{z}}\right)^\nu dz = -\left(2\, e^{e-c\sqrt{z}\,\nu} \left(e^{c\sqrt{z}}\right)^\nu (b+c\,\nu)^{-2n-2}\, \Gamma\left(2\,(n+1), -\sqrt{z}\,(b+c\,\nu)\right)\right) /;\, n \in \mathbb{Z}$$

01.03.21.0662.01

$$\int z^n e^{\sqrt{z}\, b+e} \left(e^{\sqrt{z}\, c}\right)^\nu dz = -2\, e^{e-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, c}\right)^\nu (b+c\,\nu)^{-2(n+1)} \left(-\frac{\mathrm{Ei}\left(\sqrt{z}\,(b+c\,\nu)\right)}{(-2\,(n+1))!} + e^{\sqrt{z}\,(b+c\,\nu)} \sum_{j=0}^{2n+1} \frac{\left(-\sqrt{z}\,(b+c\,\nu)\right)^j}{(2\,(n+1))_{j-2n-1}} - e^{\sqrt{z}\,(b+c\,\nu)} \sum_{j=2(n+1)}^{-1} \frac{\left(-\sqrt{z}\,(b+c\,\nu)\right)^j}{(2\,(n+1))_{j-2n-1}}\right) /;\, n \in \mathbb{Z}$$

Involving $z^n e^{b z^r + d z}\left(e^{c z^r}\right)^\nu$

01.03.21.0663.01

$$\int z^n e^{b z^2+d z} \left(e^{c z^2}\right)^\nu dz = -\frac{1}{2\sqrt{b+c\,\nu}} \left(e^{-\frac{d^2}{4(b+c\,\nu)}-c z^2 \nu} \left(e^{c z^2}\right)^\nu \sum_{q=0}^{n} 2^{q-n} (-d)^{n-q} (b+c\,\nu)^{-n-\frac{1}{2}} (d+2z(b+c\,\nu))^{q+1} \left(-\frac{(d+2z(b+c\,\nu))^2}{b+c\,\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d+2z(b+c\,\nu))^2}{4(b+c\,\nu)}\right)\right) /;\, n \in \mathbb{N}$$

01.03.21.0664.01

$$\int z^n e^{\sqrt{z}\, b+d z} \left(e^{\sqrt{z}\, c}\right)^\nu dz = 2^{-2n-1} d^{-2(n+1)} e^{-\frac{(b+c\,\nu)^2}{4d}-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, c}\right)^\nu \sum_{k=0}^{n}\sum_{h=0}^{k} (-1)^{k-h} 4^k (b+c\,\nu)^{-h-k+2n} \left(b+c\,\nu+2d\sqrt{z}\right)^{h+k} \left(-\frac{\left(b+c\,\nu+2d\sqrt{z}\right)^2}{d}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left((b+c\,\nu)\left(b+c\,\nu+2d\sqrt{z}\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+c\,\nu+2d\sqrt{z}\right)^2}{4d}\right) + 2\sqrt{-\frac{\left(b+c\,\nu+2d\sqrt{z}\right)^2}{d}}\; d\,\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+c\,\nu+2d\sqrt{z}\right)^2}{4d}\right)\right) /;\, n \in \mathbb{N}$$

Involving $z^n e^{b z^r + d z + e}\left(e^{c z^r}\right)^\nu$

01.03.21.0665.01

$$\int z^n e^{b z^2+d z+e} \left(e^{c z^2}\right)^\nu \, dz = -\frac{1}{2\sqrt{b+c\nu}} \left(e^{-\frac{d^2}{4(b+c\nu)}+e-c z^2 \nu} \left(e^{c z^2}\right)^\nu \sum_{q=0}^{n} 2^{q-n} (-d)^{n-q} (b+c\nu)^{-n-\frac{1}{2}} (d+2z(b+c\nu))^{q+1} \left(-\frac{(d+2z(b+c\nu))^2}{b+c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d+2z(b+c\nu))^2}{4(b+c\nu)}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0666.01

$$\int z^n e^{\sqrt{z}\, b+d z+e} \left(e^{\sqrt{z}\, c}\right)^\nu \, dz = 2^{-2n-1} d^{-2(n+1)} e^{-\frac{(b+c\nu)^2}{4d}+e-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, c}\right)^\nu \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k (b+c\nu)^{-h-k+2n} \left(b+c\nu+2d\sqrt{z}\right)^{h+k} \left(-\frac{\left(b+c\nu+2d\sqrt{z}\right)^2}{d}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left((b+c\nu)\left(b+c\nu+2d\sqrt{z}\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+c\nu+2d\sqrt{z}\right)^2}{4d}\right) + 2\sqrt{-\frac{\left(b+c\nu+2d\sqrt{z}\right)^2}{d}}\; d\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+c\nu+2d\sqrt{z}\right)^2}{4d}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n e^{d z} \left(e^{c z^r+g}\right)^\nu$

01.03.21.0667.01

$$\int z^n e^{d z} \left(e^{c z^2+g}\right)^\nu \, dz = -\frac{1}{2\sqrt{c\nu}} \left(e^{-\frac{d^2}{4c\nu}-c z^2 \nu} \left(e^{c z^2+g}\right)^\nu \sum_{q=0}^{n} 2^{q-n} (-d)^{n-q} (c\nu)^{-n-\frac{1}{2}} (d+2cz\nu)^{q+1} \left(-\frac{(d+2cz\nu)^2}{c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d+2cz\nu)^2}{4c\nu}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0668.01

$$\int z^n e^{d z} \left(e^{\sqrt{z}\, c+g}\right)^\nu dz = 2^{-2n-1} d^{-2(n+1)} e^{-\frac{c\nu\left(4\sqrt{z}\, d+c\nu\right)}{4d}} \left(e^{\sqrt{z}\, c+g}\right)^\nu \sum_{k=0}^n \sum_{h=0}^k (-1)^{k-h} 4^k (c\nu)^{-h-k+2n} \left(2\sqrt{z}\, d+c\nu\right)^{h+k} \left(-\frac{\left(2\sqrt{z}\, d+c\nu\right)^2}{d}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left(c\nu\left(2\sqrt{z}\, d+c\nu\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(2\sqrt{z}\, d+c\nu\right)^2}{4d}\right) + 2\sqrt{-\frac{\left(2\sqrt{z}\, d+c\nu\right)^2}{d}}\, d\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(2\sqrt{z}\, d+c\nu\right)^2}{4d}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n e^{d z+e}\left(e^{c z^r+g}\right)^\nu$

01.03.21.0669.01

$$\int z^n e^{e+d z} \left(e^{c z^2+g}\right)^\nu dz = -\frac{1}{2\sqrt{c\nu}} e^{-\frac{d^2}{4c\nu}+e-c z^2\nu} \left(e^{c z^2+g}\right)^\nu \sum_{q=0}^n 2^{q-n} (-d)^{n-q} (c\nu)^{-n-\frac{1}{2}} (d+2cz\nu)^{q+1} \left(-\frac{(d+2cz\nu)^2}{c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d+2cz\nu)^2}{4c\nu}\right) /; n \in \mathbb{N}$$

01.03.21.0670.01

$$\int z^n e^{d z+e} \left(e^{\sqrt{z}\, c+g}\right)^\nu dz = 2^{-2n-1} d^{-2(n+1)} e^{e-\frac{c\nu\left(4\sqrt{z}\, d+c\nu\right)}{4d}} \left(e^{\sqrt{z}\, c+g}\right)^\nu \sum_{k=0}^n \sum_{h=0}^k (-1)^{k-h} 4^k (c\nu)^{-h-k+2n} \left(2\sqrt{z}\, d+c\nu\right)^{h+k} \left(-\frac{\left(2\sqrt{z}\, d+c\nu\right)^2}{d}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left(c\nu\left(2\sqrt{z}\, d+c\nu\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(2\sqrt{z}\, d+c\nu\right)^2}{4d}\right) + 2\sqrt{-\frac{\left(2\sqrt{z}\, d+c\nu\right)^2}{d}}\, d\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(2\sqrt{z}\, d+c\nu\right)^2}{4d}\right)\right) /; n \in \mathbb{N}$$

Involving $z^{\alpha-1} e^{b z^r}\left(e^{c z^r+g}\right)^\nu$

01.03.21.0671.01

$$\int z^{\alpha-1} e^{b z^r} \left(e^{c z^r+g}\right)^\nu dz = -\frac{e^{-c\nu z^r} \left(e^{c z^r+g}\right)^\nu z^\alpha \left(-z^r (b+c\nu)\right)^{-\frac{\alpha}{r}} \Gamma\left(\frac{\alpha}{r}, -z^r (b+c\nu)\right)}{r}$$

01.03.21.0672.01

$$\int z^n e^{b z^2} \left(e^{c z^2+g}\right)^\nu dz = -\frac{1}{2} e^{-c z^2\nu} \left(e^{c z^2+g}\right)^\nu z^{n+1} \left(-z^2 (b+c\nu)\right)^{\frac{1}{2}(-n-1)} \Gamma\left(\frac{n+1}{2}, -z^2 (b+c\nu)\right) /; n \in \mathbb{Z}$$

01.03.21.0673.01

$$\int z^{2n} e^{b z^2} \left(e^{c z^2+g}\right)^{\nu} dz = -\frac{1}{2} e^{-c z^2 \nu} \left(e^{c z^2+g}\right)^{\nu} z^{2n+1} \left(-z^2 (b+c\nu)\right)^{-n-\frac{1}{2}} \left(\operatorname{erfc}\left(\sqrt{-z^2 (b+c\nu)}\right) \Gamma\left(n+\frac{1}{2}\right) + e^{z^2 (b+c\nu)} \sum_{j=0}^{n-1} \frac{\left(-z^2 (b+c\nu)\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} - e^{z^2 (b+c\nu)} \sum_{j=n}^{-1} \frac{\left(-z^2 (b+c\nu)\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}}\right) /; n \in \mathbb{Z}$$

01.03.21.0674.01

$$\int z^{2n+1} e^{b z^2} \left(e^{c z^2+g}\right)^{\nu} dz = -\frac{1}{2} e^{-c z^2 \nu} \left(e^{c z^2+g}\right)^{\nu} (-(b+c\nu))^{-n-1} \left(\frac{(-1)^n \operatorname{Ei}\left(z^2 (b+c\nu)\right)}{(-n-1)!} + e^{z^2 (b+c\nu)} \sum_{j=0}^{n} \frac{\left(-z^2 (b+c\nu)\right)^j}{(n+1)_{j-n}} - e^{z^2 (b+c\nu)} \sum_{j=n+1}^{-1} \frac{\left(-z^2 (b+c\nu)\right)^j}{(n+1)_{j-n}}\right) /; n \in \mathbb{Z}$$

01.03.21.0675.01

$$\int z^n e^{\sqrt{z}\, b} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} dz = -2 e^{-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} (b+c\nu)^{-2n-2} \Gamma\left(2(n+1), -\sqrt{z}\,(b+c\nu)\right) /; n \in \mathbb{Z}$$

01.03.21.0676.01

$$\int z^n e^{\sqrt{z}\, b} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} dz = -2 e^{-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} (b+c\nu)^{-2(n+1)} \left(-\frac{\operatorname{Ei}\left(\sqrt{z}\,(b+c\nu)\right)}{(-2(n+1))!} + e^{\sqrt{z}\,(b+c\nu)} \sum_{j=0}^{2n+1} \frac{\left(-\sqrt{z}\,(b+c\nu)\right)^j}{(2(n+1))_{j-2n-1}} - e^{\sqrt{z}\,(b+c\nu)} \sum_{j=2(n+1)}^{-1} \frac{\left(-\sqrt{z}\,(b+c\nu)\right)^j}{(2(n+1))_{j-2n-1}}\right) /; n \in \mathbb{Z}$$

Involving $z^{\alpha-1} e^{b z^r+e} \left(e^{c z^r+g}\right)^{\nu}$

01.03.21.0677.01

$$\int z^{\alpha-1} e^{b z^r+e} \left(e^{c z^r+g}\right)^{\nu} dz = -\frac{e^{e-c\nu z^r} \left(e^{c z^r+g}\right)^{\nu} z^{\alpha} \left(-z^r (b+c\nu)\right)^{-\frac{\alpha}{r}} \Gamma\left(\frac{\alpha}{r}, -z^r (b+c\nu)\right)}{r}$$

01.03.21.0678.01

$$\int z^n e^{b z^2+e} \left(e^{c z^2+g}\right)^{\nu} dz = -\frac{1}{2} e^{e-c z^2 \nu} \left(e^{c z^2+g}\right)^{\nu} z^{n+1} \left(-z^2 (b+c\nu)\right)^{\frac{1}{2}(-n-1)} \Gamma\left(\frac{n+1}{2}, -z^2 (b+c\nu)\right) /; n \in \mathbb{Z}$$

01.03.21.0679.01

$$\int z^{2n} e^{b z^2+e} \left(e^{c z^2+g}\right)^{\nu} dz = -\frac{1}{2} e^{e-c z^2 \nu} \left(e^{c z^2+g}\right)^{\nu} z^{2n+1} \left(-z^2 (b+c\nu)\right)^{-n-\frac{1}{2}} \left(\operatorname{erfc}\left(\sqrt{-z^2 (b+c\nu)}\right) \Gamma\left(n+\frac{1}{2}\right) + e^{z^2 (b+c\nu)} \sum_{j=0}^{n-1} \frac{\left(-z^2 (b+c\nu)\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} - e^{z^2 (b+c\nu)} \sum_{j=n}^{-1} \frac{\left(-z^2 (b+c\nu)\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}}\right) /; n \in \mathbb{Z}$$

01.03.21.0680.01

$$\int z^{2n+1} e^{b z^2+e} \left(e^{c z^2+g}\right)^{\nu} dz = -\frac{1}{2} e^{e-c z^2 \nu} \left(e^{c z^2+g}\right)^{\nu} (-(b+c\nu))^{-n-1} \left(\frac{(-1)^n \operatorname{Ei}\left(z^2 (b+c\nu)\right)}{(-n-1)!} + e^{z^2 (b+c\nu)} \sum_{j=0}^{n} \frac{\left(-z^2 (b+c\nu)\right)^j}{(n+1)_{j-n}} - e^{z^2 (b+c\nu)} \sum_{j=n+1}^{-1} \frac{\left(-z^2 (b+c\nu)\right)^j}{(n+1)_{j-n}}\right) /; n \in \mathbb{Z}$$

01.03.21.0681.01

$$\int z^n e^{\sqrt{z}\, b+e} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} dz = -2\, e^{e-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} (b+c\,\nu)^{-2n-2}\, \Gamma\!\left(2(n+1), -\sqrt{z}\,(b+c\,\nu)\right) /;\, n\in\mathbb{Z}$$

01.03.21.0682.01

$$\int z^n e^{\sqrt{z}\, b+e} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} dz = -2\, e^{e-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} (b+c\,\nu)^{-2(n+1)} \left(-\frac{\mathrm{Ei}\left(\sqrt{z}\,(b+c\,\nu)\right)}{(-2(n+1))!} + e^{\sqrt{z}\,(b+c\,\nu)} \sum_{j=0}^{2n+1} \frac{\left(-\sqrt{z}\,(b+c\,\nu)\right)^j}{(2(n+1))_{j-2n-1}} - e^{\sqrt{z}\,(b+c\,\nu)} \sum_{j=2(n+1)}^{-1} \frac{\left(-\sqrt{z}\,(b+c\,\nu)\right)^j}{(2(n+1))_{j-2n-1}}\right) /;\, n\in\mathbb{Z}$$

Involving $z^n e^{b z^r+d z}\left(e^{c z^r+g}\right)^{\nu}$

01.03.21.0683.01

$$\int z^n e^{b z^2+d z} \left(e^{c z^2+g}\right)^{\nu} dz = -\frac{1}{2\sqrt{b+c\,\nu}} \left(e^{-\frac{d^2}{4(b+c\,\nu)}-c z^2 \nu} \left(e^{c z^2+g}\right)^{\nu} \sum_{q=0}^{n} 2^{q-n} (-d)^{n-q} (b+c\,\nu)^{-n-\frac{1}{2}} (d+2 z (b+c\,\nu))^{q+1} \left(-\frac{(d+2 z (b+c\,\nu))^2}{b+c\,\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\!\left(\frac{q+1}{2}, -\frac{(d+2 z (b+c\,\nu))^2}{4 (b+c\,\nu)}\right)\right) /;\, n\in\mathbb{N}$$

01.03.21.0684.01

$$\int z^n e^{\sqrt{z}\, b+d z} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} dz = 2^{-2n-1} d^{-2(n+1)} e^{-\frac{(b+c\,\nu)^2}{4d}-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} \sum_{k=0}^{n}\sum_{h=0}^{k} (-1)^{k-h} 4^k (b+c\,\nu)^{-h-k+2n} \left(b+c\,\nu+2 d\sqrt{z}\right)^{h+k} \left(-\frac{\left(b+c\,\nu+2 d\sqrt{z}\right)^2}{d}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left((b+c\,\nu)\left(b+c\,\nu+2 d\sqrt{z}\right) \Gamma\!\left(\frac{1}{2}(h+k+1), -\frac{\left(b+c\,\nu+2 d\sqrt{z}\right)^2}{4d}\right) + 2\sqrt{-\frac{\left(b+c\,\nu+2 d\sqrt{z}\right)^2}{d}}\; d\, \Gamma\!\left(\frac{1}{2}(h+k+2), -\frac{\left(b+c\,\nu+2 d\sqrt{z}\right)^2}{4d}\right)\right) /;\, n\in\mathbb{N}$$

Involving $z^n e^{b z^r+d z+e}\left(e^{c z^r+g}\right)^{\nu}$

01.03.21.0685.01

$$\int z^n e^{b z^2+d z+e} \left(e^{c z^2+g}\right)^\nu dz = -\frac{1}{2\sqrt{b+c\nu}} \left(e^{-\frac{d^2}{4(b+c\nu)}+e-c z^2 \nu} \left(e^{c z^2+g}\right)^\nu \sum_{q=0}^{n} 2^{q-n} (-d)^{n-q} (b+c\nu)^{-n-\frac{1}{2}} (d+2z(b+c\nu))^{q+1} \left(-\frac{(d+2z(b+c\nu))^2}{b+c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d+2z(b+c\nu))^2}{4(b+c\nu)}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0686.01

$$\int z^n e^{\sqrt{z}\, b+d z+e} \left(e^{\sqrt{z}\, c+g}\right)^\nu dz = 2^{-2n-1} d^{-2(n+1)} e^{-\frac{(b+c\nu)^2}{4d}+e-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, c+g}\right)^\nu \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k (b+c\nu)^{-h-k+2n} \left(b+c\nu+2d\sqrt{z}\right)^{h+k} \left(-\frac{\left(b+c\nu+2d\sqrt{z}\right)^2}{d}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left((b+c\nu)\left(b+c\nu+2d\sqrt{z}\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+c\nu+2d\sqrt{z}\right)^2}{4d}\right) + 2\sqrt{-\frac{\left(b+c\nu+2d\sqrt{z}\right)^2}{d}}\, d\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+c\nu+2d\sqrt{z}\right)^2}{4d}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n e^{d z} \left(e^{c z^r+f z}\right)^\nu$

01.03.21.0687.01

$$\int z^n e^{d z} \left(e^{c z^2+f z}\right)^\nu dz = -\frac{1}{2\sqrt{c\nu}} \left(e^{-\frac{(d+f\nu)^2}{4c\nu}-z(f+cz)\nu} \left(e^{z(f+cz)}\right)^\nu \sum_{q=0}^{n} 2^{q-n} (c\nu)^{-n-\frac{1}{2}} (-d-f\nu)^{n-q} (d+f\nu+2cz\nu)^{q+1} \left(-\frac{(d+f\nu+2cz\nu)^2}{c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d+f\nu+2cz\nu)^2}{4c\nu}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0688.01

$$\int z^n e^{d z}\left(e^{\sqrt{z}\,c+f z}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{c^2\nu^2}{4(d+f\nu)}-f z\nu-c\sqrt{z}\,\nu}\left(e^{\sqrt{z}\,c+f z}\right)^{\nu}(d+f\nu)^{-2(n+1)} \sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h}4^k(c\nu)^{-h-k+2n}\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^{h+k}\left(-\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{d+f\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k}\left(c\nu\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)\Gamma\left(\frac{1}{2}(h+k+1),-\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{4(d+f\nu)}\right)+ 2\sqrt{-\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{d+f\nu}}\,(d+f\nu)\,\Gamma\left(\frac{1}{2}(h+k+2),-\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{4(d+f\nu)}\right)\right)/;\, n\in\mathbb{N}$$

Involving $z^n e^{d z+e}\left(e^{c z^r+f z}\right)^{\nu}$

01.03.21.0689.01

$$\int z^n e^{d z+e}\left(e^{c z^2+f z}\right)^{\nu} dz = -\frac{1}{2\sqrt{c\nu}}\left(e^{-\frac{(d+f\nu)^2}{4c\nu}+e-z(f+c z)\nu}\left(e^{z(f+c z)}\right)^{\nu}\sum_{q=0}^{n}2^{q-n}(c\nu)^{-n-\frac{1}{2}}(-d-f\nu)^{n-q}(d+f\nu+2c z\nu)^{q+1}\left(-\frac{(d+f\nu+2c z\nu)^2}{c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q}\Gamma\left(\frac{q+1}{2},-\frac{(d+f\nu+2c z\nu)^2}{4c\nu}\right)\right)/;\, n\in\mathbb{N}$$

01.03.21.0690.01

$$\int z^n e^{d z+e}\left(e^{\sqrt{z}\,c+f z}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{c^2\nu^2}{4(d+f\nu)}-f z\nu-c\sqrt{z}\,\nu+e}\left(e^{\sqrt{z}\,c+f z}\right)^{\nu}(d+f\nu)^{-2(n+1)} \sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h}4^k(c\nu)^{-h-k+2n}\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^{h+k}\left(-\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{d+f\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k}\left(c\nu\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)\Gamma\left(\frac{1}{2}(h+k+1),-\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{4(d+f\nu)}\right)+ 2\sqrt{-\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{d+f\nu}}\,(d+f\nu)\,\Gamma\left(\frac{1}{2}(h+k+2),-\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{4(d+f\nu)}\right)\right)/;\, n\in\mathbb{N}$$

Involving $z^n e^{b z^r}\left(e^{c z^r+f z}\right)^\nu$

01.03.21.0691.01

$$\int z^n e^{b z^2}\left(e^{c z^2+f z}\right)^\nu dz = -\frac{1}{2\sqrt{b+c\nu}}\left(e^{-\frac{f^2\nu^2}{4(b+c\nu)}-z(f+cz)\nu}\left(e^{z(f+cz)}\right)^\nu \sum_{q=0}^n 2^{q-n}(-f\nu)^{n-q}(b+c\nu)^{-n-\frac{1}{2}}\right.$$
$$\left.(f\nu+2z(b+c\nu))^{q+1}\left(-\frac{(f\nu+2z(b+c\nu))^2}{b+c\nu}\right)^{\frac{1}{2}(-q-1)}\binom{n}{q}\Gamma\left(\frac{q+1}{2}, -\frac{(f\nu+2z(b+c\nu))^2}{4(b+c\nu)}\right)\right) /; n\in\mathbb{N}$$

01.03.21.0692.01

$$\int z^n e^{\sqrt{z}\, b}\left(e^{\sqrt{z}\, c+f z}\right)^\nu dz = 2^{-2n-1} e^{-\frac{(b+c\nu)^2}{4f\nu}-f z\nu-c\sqrt{z}\,\nu}\left(e^{\sqrt{z}\, c+f z}\right)^\nu (f\nu)^{-2(n+1)}$$
$$\sum_{k=0}^n\sum_{h=0}^k(-1)^{k-h}4^k(b+c\nu)^{-h-k+2n}\left(b+c\nu+2f\sqrt{z}\,\nu\right)^{h+k}\left(-\frac{\left(b+c\nu+2f\sqrt{z}\,\nu\right)^2}{f\nu}\right)^{\frac{1}{2}(-h-k-1)}$$
$$\binom{k}{h}\binom{n}{k}\left((b+c\nu)\left(b+c\nu+2f\sqrt{z}\,\nu\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+c\nu+2f\sqrt{z}\,\nu\right)^2}{4f\nu}\right)+\right.$$
$$\left.2f\nu\sqrt{-\frac{\left(b+c\nu+2f\sqrt{z}\,\nu\right)^2}{f\nu}}\;\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+c\nu+2f\sqrt{z}\,\nu\right)^2}{4f\nu}\right)\right) /; n\in\mathbb{N}$$

Involving $z^n e^{b z^r+e}\left(e^{c z^r+f z}\right)^\nu$

01.03.21.0693.01

$$\int z^n e^{b z^2+e}\left(e^{c z^2+f z}\right)^\nu dz = -\frac{1}{2\sqrt{b+c\nu}}\left(e^{-\frac{f^2\nu^2}{4(b+c\nu)}-z(f+cz)\nu+e}\left(e^{z(f+cz)}\right)^\nu \sum_{q=0}^n 2^{q-n}(-f\nu)^{n-q}(b+c\nu)^{-n-\frac{1}{2}}\right.$$
$$\left.(f\nu+2z(b+c\nu))^{q+1}\left(-\frac{(f\nu+2z(b+c\nu))^2}{b+c\nu}\right)^{\frac{1}{2}(-q-1)}\binom{n}{q}\Gamma\left(\frac{q+1}{2}, -\frac{(f\nu+2z(b+c\nu))^2}{4(b+c\nu)}\right)\right) /; n\in\mathbb{N}$$

01.03.21.0694.01

$$\int z^n e^{\sqrt{z}\, b+e} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{(b+c\nu)^2}{4 f \nu}+e-f z \nu-c \sqrt{z}\, \nu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} (f \nu)^{-2(n+1)} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k (b+c\nu)^{-h-k+2n} \left(b+c\nu+2 f \sqrt{z}\, \nu\right)^{h+k} \left(-\frac{\left(b+c\nu+2 f \sqrt{z}\, \nu\right)^2}{f \nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h} \binom{n}{k} \left((b+c\nu)\left(b+c\nu+2 f \sqrt{z}\, \nu\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+c\nu+2 f \sqrt{z}\, \nu\right)^2}{4 f \nu}\right) + 2 f \nu \sqrt{-\frac{\left(b+c\nu+2 f \sqrt{z}\, \nu\right)^2}{f \nu}}\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+c\nu+2 f \sqrt{z}\, \nu\right)^2}{4 f \nu}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n e^{b z^r+d z}\left(e^{c z^r+f z}\right)^{\nu}$

01.03.21.0695.01

$$\int z^n e^{b z^2+d z} \left(e^{c z^2+f z}\right)^{\nu} dz = -\frac{1}{2\sqrt{b+c\nu}} e^{-\frac{(d+f\nu)^2}{4(b+c\nu)}-z(f+c z)\nu} \left(e^{z(f+c z)}\right)^{\nu} \sum_{q=0}^{n} 2^{q-n} (b+c\nu)^{-n-\frac{1}{2}} (-d-f\nu)^{n-q} (d+f\nu+2z(b+c\nu))^{q+1} \left(-\frac{(d+f\nu+2z(b+c\nu))^2}{b+c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d+f\nu+2z(b+c\nu))^2}{4(b+c\nu)}\right) /; n \in \mathbb{N}$$

01.03.21.0696.01

$$\int z^n e^{\sqrt{z}\, b+d z} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{(b+c\nu)^2}{4(d+f\nu)}-f z \nu-c\sqrt{z}\, \nu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} (d+f\nu)^{-2(n+1)} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k (b+c\nu)^{-h-k+2n} \left(b+c\nu+2\sqrt{z}\,(d+f\nu)\right)^{h+k} \left(-\frac{\left(b+c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{d+f\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h} \binom{n}{k} \left((b+c\nu)\left(b+c\nu+2\sqrt{z}\,(d+f\nu)\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{4(d+f\nu)}\right) + 2\sqrt{-\frac{\left(b+c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{d+f\nu}}\,(d+f\nu)\, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{4(d+f\nu)}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n e^{b z^r + d z + e} \left(e^{c z^r + f z}\right)^{\nu}$

01.03.21.0697.01

$$\int z^n e^{b z^2 + d z + e} \left(e^{c z^2 + f z}\right)^{\nu} dz = -\frac{1}{2\sqrt{b + c \nu}} e^{-\frac{(d + f \nu)^2}{4 (b + c \nu)} + e - z (f + c z) \nu} \left(e^{z (f + c z)}\right)^{\nu} \sum_{q=0}^{n} 2^{q-n} (b + c \nu)^{-n-\frac{1}{2}} (-d - f \nu)^{n-q} (d + f \nu + 2 z (b + c \nu))^{q+1} \left(-\frac{(d + f \nu + 2 z (b + c \nu))^2}{b + c \nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d + f \nu + 2 z (b + c \nu))^2}{4 (b + c \nu)}\right) /; n \in \mathbb{N}$$

01.03.21.0698.01

$$\int z^n e^{\sqrt{z}\, b + d z + e} \left(e^{\sqrt{z}\, c + f z}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{(b + c \nu)^2}{4 (d + f \nu)} + e - f z \nu - c \sqrt{z}\, \nu} \left(e^{\sqrt{z}\, c + f z}\right)^{\nu} (d + f \nu)^{-2(n+1)} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k (b + c \nu)^{-h-k+2n} \left(b + c \nu + 2 \sqrt{z}\, (d + f \nu)\right)^{h+k} \left(-\frac{\left(b + c \nu + 2 \sqrt{z}\, (d + f \nu)\right)^2}{d + f \nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h} \binom{n}{k} \left((b + c \nu) \left(b + c \nu + 2 \sqrt{z}\, (d + f \nu)\right) \Gamma\left(\frac{1}{2}(h + k + 1), -\frac{\left(b + c \nu + 2 \sqrt{z}\, (d + f \nu)\right)^2}{4 (d + f \nu)}\right) + 2 \sqrt{-\frac{\left(b + c \nu + 2 \sqrt{z}\, (d + f \nu)\right)^2}{d + f \nu}}\, (d + f \nu) \Gamma\left(\frac{1}{2}(h + k + 2), -\frac{\left(b + c \nu + 2 \sqrt{z}\, (d + f \nu)\right)^2}{4 (d + f \nu)}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n e^{d z} \left(e^{c z^r + f z + g}\right)^{\nu}$

01.03.21.0699.01

$$\int z^n e^{d z} \left(e^{c z^2 + f z + g}\right)^{\nu} dz = -\frac{1}{2\sqrt{c \nu}} \left(e^{-\frac{(d + f \nu)^2}{4 c \nu} - z (f + c z) \nu} \left(e^{g + z (f + c z)}\right)^{\nu} \sum_{q=0}^{n} 2^{q-n} (c \nu)^{-n-\frac{1}{2}} (-d - f \nu)^{n-q} (d + f \nu + 2 c z \nu)^{q+1} \left(-\frac{(d + f \nu + 2 c z \nu)^2}{c \nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d + f \nu + 2 c z \nu)^2}{4 c \nu}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0700.01

$$\int z^n e^{d z}\left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{c^2 \nu^2}{4(d+f\nu)}-f z \nu-c\sqrt{z}\,\nu}\left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu}(d+f\nu)^{-2(n+1)} \sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h}\, 4^k (c\nu)^{-h-k+2n}\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^{h+k}\left(-\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{d+f\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k}\left(c\nu\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{4(d+f\nu)}\right)+ 2\sqrt{-\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{d+f\nu}}\,(d+f\nu)\,\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{4(d+f\nu)}\right)\right) /; n\in\mathbb{N}$$

Involving $z^n e^{d z+e}\left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0701.01

$$\int z^n e^{d z+e}\left(e^{c z^2+f z+g}\right)^{\nu} dz = -\frac{1}{2\sqrt{c\nu}}\left(e^{-\frac{(d+f\nu)^2}{4c\nu}+e-z(f+c z)\nu}\left(e^{g+z(f+c z)}\right)^{\nu}\sum_{q=0}^{n} 2^{q-n}(c\nu)^{-n-\frac{1}{2}}(-d-f\nu)^{n-q}(d+f\nu+2c z\nu)^{q+1}\left(-\frac{(d+f\nu+2c z\nu)^2}{c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q}\Gamma\left(\frac{q+1}{2}, -\frac{(d+f\nu+2c z\nu)^2}{4c\nu}\right)\right) /; n\in\mathbb{N}$$

01.03.21.0702.01

$$\int z^n e^{d z+e}\left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{c^2 \nu^2}{4(d+f\nu)}-f z \nu-c\sqrt{z}\,\nu+e}\left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu}(d+f\nu)^{-2(n+1)} \sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h}\, 4^k (c\nu)^{-h-k+2n}\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^{h+k}\left(-\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{d+f\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k}\left(c\nu\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{4(d+f\nu)}\right)+ 2\sqrt{-\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{d+f\nu}}\,(d+f\nu)\,\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{4(d+f\nu)}\right)\right) /; n\in\mathbb{N}$$

Involving $z^n e^{b z^r} \left(e^{c z^r + f z + g}\right)^\nu$

01.03.21.0703.01

$$\int z^n e^{b z^2} \left(e^{c z^2 + f z + g}\right)^\nu dz = -\frac{1}{2\sqrt{b + c\nu}} \left(e^{-\frac{f^2 \nu^2}{4(b+c\nu)} - z(f + c z)\nu} \left(e^{g + z(f + c z)}\right)^\nu \sum_{q=0}^{n} 2^{q-n} (-f\nu)^{n-q} (b + c\nu)^{-n-\frac{1}{2}} (f\nu + 2z(b + c\nu))^{q+1} \left(-\frac{(f\nu + 2z(b + c\nu))^2}{b + c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(f\nu + 2z(b + c\nu))^2}{4(b + c\nu)}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0704.01

$$\int z^n e^{\sqrt{z}\, b} \left(e^{\sqrt{z}\, c + f z + g}\right)^\nu dz = 2^{-2n-1} e^{-\frac{(b+c\nu)^2}{4 f \nu} - f z \nu - c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, c + g + f z}\right)^\nu (f\nu)^{-2(n+1)} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k (b + c\nu)^{-h-k+2n} \left(b + c\nu + 2f\sqrt{z}\,\nu\right)^{h+k} \left(-\frac{\left(b + c\nu + 2f\sqrt{z}\,\nu\right)^2}{f\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left((b + c\nu)\left(b + c\nu + 2f\sqrt{z}\,\nu\right) \Gamma\left(\frac{1}{2}(h + k + 1), -\frac{\left(b + c\nu + 2f\sqrt{z}\,\nu\right)^2}{4 f\nu}\right) + 2 f\nu \sqrt{-\frac{\left(b + c\nu + 2f\sqrt{z}\,\nu\right)^2}{f\nu}}\; \Gamma\left(\frac{1}{2}(h + k + 2), -\frac{\left(b + c\nu + 2f\sqrt{z}\,\nu\right)^2}{4 f\nu}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n e^{b z^r + e} \left(e^{c z^r + f z + g}\right)^\nu$

01.03.21.0705.01

$$\int z^n e^{b z^2 + e} \left(e^{c z^2 + f z + g}\right)^\nu dz = -\frac{1}{2\sqrt{b + c\nu}} \left(e^{-\frac{f^2 \nu^2}{4(b+c\nu)} - z(f + c z)\nu + e} \left(e^{g + z(f + c z)}\right)^\nu \sum_{q=0}^{n} 2^{q-n} (-f\nu)^{n-q} (b + c\nu)^{-n-\frac{1}{2}} (f\nu + 2z(b + c\nu))^{q+1} \left(-\frac{(f\nu + 2z(b + c\nu))^2}{b + c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(f\nu + 2z(b + c\nu))^2}{4(b + c\nu)}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0706.01

$$\int z^n e^{\sqrt{z}\, b+e}\left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{(b+c\nu)^2}{4 f \nu}+e-f z \nu-c\sqrt{z}\,\nu}\left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu}(f\nu)^{-2(n+1)}$$
$$\sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h} 4^k (b+c\nu)^{-h-k+2n}\left(b+c\nu+2f\sqrt{z}\,\nu\right)^{h+k}\left(-\frac{\left(b+c\nu+2f\sqrt{z}\,\nu\right)^2}{f\nu}\right)^{\frac{1}{2}(-h-k-1)}$$
$$\binom{k}{h}\binom{n}{k}\left((b+c\nu)\left(b+c\nu+2f\sqrt{z}\,\nu\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+c\nu+2f\sqrt{z}\,\nu\right)^2}{4f\nu}\right)+\right.$$
$$\left.2f\nu\sqrt{-\frac{\left(b+c\nu+2f\sqrt{z}\,\nu\right)^2}{f\nu}}\;\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+c\nu+2f\sqrt{z}\,\nu\right)^2}{4f\nu}\right)\right) /; n\in\mathbb{N}$$

Involving $z^n e^{b z^r+d z}\left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0707.01

$$\int z^n e^{b z^2+d z}\left(e^{c z^2+f z+g}\right)^{\nu} dz ==$$
$$-\frac{1}{2\sqrt{b+c\nu}}\, e^{-\frac{(d+f\nu)^2}{4(b+c\nu)}-z(f+c z)\nu}\left(e^{g+z(f+c z)}\right)^{\nu}\sum_{q=0}^{n}2^{q-n}(b+c\nu)^{-n-\frac{1}{2}}(-d-f\nu)^{n-q}(d+f\nu+2z(b+c\nu))^{q+1}$$
$$\left(-\frac{(d+f\nu+2z(b+c\nu))^2}{b+c\nu}\right)^{\frac{1}{2}(-q-1)}\binom{n}{q}\Gamma\left(\frac{q+1}{2}, -\frac{(d+f\nu+2z(b+c\nu))^2}{4(b+c\nu)}\right) /; n\in\mathbb{N}$$

01.03.21.0708.01

$$\int z^n e^{\sqrt{z}\, b+d z}\left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{(b+c\nu)^2}{4(d+f\nu)}-f z\nu-c\sqrt{z}\,\nu}\left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu}(d+f\nu)^{-2(n+1)}$$
$$\sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h} 4^k (b+c\nu)^{-h-k+2n}\left(b+c\nu+2\sqrt{z}\,(d+f\nu)\right)^{h+k}\left(-\frac{\left(b+c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{d+f\nu}\right)^{\frac{1}{2}(-h-k-1)}$$
$$\binom{k}{h}\binom{n}{k}\left((b+c\nu)\left(b+c\nu+2\sqrt{z}\,(d+f\nu)\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b+c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{4(d+f\nu)}\right)+\right.$$
$$\left.2\sqrt{-\frac{\left(b+c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{d+f\nu}}\,(d+f\nu)\,\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b+c\nu+2\sqrt{z}\,(d+f\nu)\right)^2}{4(d+f\nu)}\right)\right) /; n\in\mathbb{N}$$

Involving $z^n\, e^{b z^r + d z + e}\left(e^{c z^r + f z + g}\right)^\nu$

01.03.21.0709.01

$$\int z^n\, e^{b z^2 + d z + e}\left(e^{c z^2 + f z + g}\right)^\nu dz = -\frac{1}{2\sqrt{b + c\nu}}\, e^{-\frac{(d+f\nu)^2}{4(b+c\nu)} + e - z(f + c z)\nu}\left(e^{g + z(f + c z)}\right)^\nu \sum_{q=0}^{n} 2^{q-n}(b + c\nu)^{-n-\frac{1}{2}}(-d - f\nu)^{n-q}(d + f\nu + 2z(b + c\nu))^{q+1} \left(-\frac{(d + f\nu + 2z(b + c\nu))^2}{b + c\nu}\right)^{\frac{1}{2}(-q-1)}\binom{n}{q}\Gamma\left(\frac{q+1}{2}, -\frac{(d + f\nu + 2z(b + c\nu))^2}{4(b + c\nu)}\right) /; n \in \mathbb{N}$$

01.03.21.0710.01

$$\int z^n\, e^{\sqrt{z}\, b + d z + e}\left(e^{\sqrt{z}\, c + f z + g}\right)^\nu dz = 2^{-2n-1}\, e^{-\frac{(b+c\nu)^2}{4(d+f\nu)} + e - f z\nu - c\sqrt{z}\,\nu}\left(e^{\sqrt{z}\, c + g + f z}\right)^\nu (d + f\nu)^{-2(n+1)} \sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h}4^k(b + c\nu)^{-h-k+2n}\left(b + c\nu + 2\sqrt{z}\,(d + f\nu)\right)^{h+k}\left(-\frac{\left(b + c\nu + 2\sqrt{z}\,(d + f\nu)\right)^2}{d + f\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k}\left((b + c\nu)\left(b + c\nu + 2\sqrt{z}\,(d + f\nu)\right)\Gamma\left(\frac{1}{2}(h + k + 1), -\frac{\left(b + c\nu + 2\sqrt{z}\,(d + f\nu)\right)^2}{4(d + f\nu)}\right) + 2\sqrt{-\frac{\left(b + c\nu + 2\sqrt{z}\,(d + f\nu)\right)^2}{d + f\nu}}\,(d + f\nu)\,\Gamma\left(\frac{1}{2}(h + k + 2), -\frac{\left(b + c\nu + 2\sqrt{z}\,(d + f\nu)\right)^2}{4(d + f\nu)}\right)\right) /; n \in \mathbb{N}$$

Involving product of powers of two direct functions and a power function

Involving $z^{\alpha-1}\left(e^{c z}\right)^\mu\left(e^{a z}\right)^\nu$

01.03.21.0711.01

$$\int z^{\alpha-1}\left(e^{c z}\right)^\mu\left(e^{a z}\right)^\nu dz = -e^{-z(c\mu + a\nu)}\left(e^{a z}\right)^\nu\left(e^{c z}\right)^\mu z^\alpha(-z(c\mu + a\nu))^{-\alpha}\,\Gamma(\alpha, -z(c\mu + a\nu))$$

01.03.21.0712.01

$$\int z^n\left(e^{c z}\right)^\mu\left(e^{a z}\right)^\nu dz = -e^{-z(c\mu + a\nu)}\left(e^{a z}\right)^\nu\left(e^{c z}\right)^\mu z^{n+1}(-z(c\mu + a\nu))^{-n-1}\,\Gamma(n + 1, -z(c\mu + a\nu)) /; n \in \mathbb{Z}$$

01.03.21.0713.01

$$\int z^n\left(e^{c z}\right)^\mu\left(e^{a z}\right)^\nu dz = -e^{-z(c\mu + a\nu)}\left(e^{a z}\right)^\nu\left(e^{c z}\right)^\mu z^{n+1}(-z(c\mu + a\nu))^{-n-1} \left(\frac{(-1)^n\,\mathrm{Ei}(z(c\mu + a\nu))}{(-n-1)!} + e^{z(c\mu + a\nu)}\sum_{j=0}^{n}\frac{(-z(c\mu + a\nu))^j}{(n+1)_{j-n}} - e^{z(c\mu + a\nu)}\sum_{j=n+1}^{-1}\frac{(-z(c\mu + a\nu))^j}{(n+1)_{j-n}}\right) /; n \in \mathbb{Z}$$

01.03.21.0714.01

$$\int z^{n+\frac{1}{2}} (e^{c z})^{\mu} (e^{a z})^{\nu} \, dz = -e^{-z (c \mu + a \nu)} (e^{a z})^{\nu} (e^{c z})^{\mu} z^{n+\frac{3}{2}} (-z (c \mu + a \nu))^{-n-\frac{3}{2}} \left(\operatorname{erfc}\left(\sqrt{-z (c \mu + a \nu)}\right) \Gamma\left(n+\frac{3}{2}\right) + e^{z (c \mu + a \nu)} \sum_{j=0}^{n} \frac{(-z (c \mu + a \nu))^{j+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{j-n}} - e^{z (c \mu + a \nu)} \sum_{j=n+1}^{-1} \frac{(-z (c \mu + a \nu))^{j+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{j-n}} \right) /; n \in \mathbb{Z}$$

Involving $z^{\alpha-1} (e^{c z})^{\mu} (e^{a z+b})^{\nu}$

01.03.21.0715.01

$$\int z^{\alpha-1} (e^{c z})^{\mu} \left(e^{a z+b}\right)^{\nu} dz = -e^{-z (c \mu + a \nu)} \left(e^{b+a z}\right)^{\nu} (e^{c z})^{\mu} z^{\alpha} (-z (c \mu + a \nu))^{-\alpha} \Gamma(\alpha, -z (c \mu + a \nu))$$

01.03.21.0716.01

$$\int z^{n} \left(e^{c z}\right)^{\mu} \left(e^{a z+b}\right)^{\nu} dz = -e^{-z (c \mu + a \nu)} \left(e^{b+a z}\right)^{\nu} (e^{c z})^{\mu} z^{n+1} (-z (c \mu + a \nu))^{-n-1} \Gamma(n+1, -z (c \mu + a \nu)) /; n \in \mathbb{Z}$$

01.03.21.0717.01

$$\int z^{n} \left(e^{c z}\right)^{\mu} \left(e^{a z+b}\right)^{\nu} dz = -e^{-z (c \mu + a \nu)} \left(e^{b+a z}\right)^{\nu} (e^{c z})^{\mu} z^{n+1} (-z (c \mu + a \nu))^{-n-1} \left(\frac{(-1)^{n} \operatorname{Ei}(z (c \mu + a \nu))}{(-n-1)!} + e^{z (c \mu + a \nu)} \sum_{j=0}^{n} \frac{(-z (c \mu + a \nu))^{j}}{(n+1)_{j-n}} - e^{z (c \mu + a \nu)} \sum_{j=n+1}^{-1} \frac{(-z (c \mu + a \nu))^{j}}{(n+1)_{j-n}} \right) /; n \in \mathbb{Z}$$

01.03.21.0718.01

$$\int z^{n+\frac{1}{2}} (e^{c z})^{\mu} \left(e^{b+a z}\right)^{\nu} dz = -e^{-z (c \mu + a \nu)} \left(e^{b+a z}\right)^{\nu} (e^{c z})^{\mu} z^{n+\frac{3}{2}} (-z (c \mu + a \nu))^{-n-\frac{3}{2}} \left(\operatorname{erfc}\left(\sqrt{-z (c \mu + a \nu)}\right) \Gamma\left(n+\frac{3}{2}\right) + e^{z (c \mu + a \nu)} \sum_{j=0}^{n} \frac{(-z (c \mu + a \nu))^{j+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{j-n}} - e^{z (c \mu + a \nu)} \sum_{j=n+1}^{-1} \frac{(-z (c \mu + a \nu))^{j+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{j-n}} \right) /; n \in \mathbb{Z}$$

Involving $z^{\alpha-1} (e^{c z+d})^{\mu} (e^{a z+b})^{\nu}$

01.03.21.0719.01

$$\int z^{\alpha-1} \left(e^{c z+d}\right)^{\mu} \left(e^{a z+b}\right)^{\nu} dz = -e^{-z (c \mu + a \nu)} \left(e^{b+a z}\right)^{\nu} \left(e^{d+c z}\right)^{\mu} z^{\alpha} (-z (c \mu + a \nu))^{-\alpha} \Gamma(\alpha, -z (c \mu + a \nu))$$

01.03.21.0720.01

$$\int z^{n} \left(e^{c z+d}\right)^{\mu} \left(e^{a z+b}\right)^{\nu} dz = -e^{-z (c \mu + a \nu)} \left(e^{b+a z}\right)^{\nu} \left(e^{d+c z}\right)^{\mu} z^{n+1} (-z (c \mu + a \nu))^{-n-1} \Gamma(n+1, -z (c \mu + a \nu)) /; n \in \mathbb{Z}$$

01.03.21.0721.01

$$\int z^{n} \left(e^{c z+d}\right)^{\mu} \left(e^{a z+b}\right)^{\nu} dz = -e^{-z (c \mu + a \nu)} \left(e^{b+a z}\right)^{\nu} \left(e^{d+c z}\right)^{\mu} z^{n+1} (-z (c \mu + a \nu))^{-n-1} \left(\frac{(-1)^{n} \operatorname{Ei}(z (c \mu + a \nu))}{(-n-1)!} + e^{z (c \mu + a \nu)} \sum_{j=0}^{n} \frac{(-z (c \mu + a \nu))^{j}}{(n+1)_{j-n}} - e^{z (c \mu + a \nu)} \sum_{j=n+1}^{-1} \frac{(-z (c \mu + a \nu))^{j}}{(n+1)_{j-n}} \right) /; n \in \mathbb{Z}$$

01.03.21.0722.01

$$\int z^{n+\frac{1}{2}}\left(e^{d+c z}\right)^{\mu}\left(e^{b+a z}\right)^{\nu} dz = -e^{-z(c\mu+a\nu)}\left(e^{b+a z}\right)^{\nu}\left(e^{d+c z}\right)^{\mu} z^{n+\frac{3}{2}}\left(-z(c\mu+a\nu)\right)^{-n-\frac{3}{2}} \left(\operatorname{erfc}\left(\sqrt{-z(c\mu+a\nu)}\right)\Gamma\left(n+\frac{3}{2}\right)+e^{z(c\mu+a\nu)}\sum_{j=0}^{n}\frac{(-z(c\mu+a\nu))^{j+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{j-n}}-e^{z(c\mu+a\nu)}\sum_{j=n+1}^{-1}\frac{(-z(c\mu+a\nu))^{j+\frac{1}{2}}}{\left(n+\frac{3}{2}\right)_{j-n}}\right)/;\ n\in\mathbb{Z}$$

Involving $z^n\left(e^{b z}\right)^{\mu}\left(e^{c z^r}\right)^{\nu}$

01.03.21.0723.01

$$\int z^n\left(e^{b z}\right)^{\mu}\left(e^{c z^2}\right)^{\nu} dz = -\frac{1}{2\sqrt{c\nu}}\left(e^{-\frac{b^2\mu^2}{4c\nu}-z(b\mu+c z\nu)}\left(e^{b z}\right)^{\mu}\left(e^{c z^2}\right)^{\nu} \sum_{q=0}^{n} 2^{q-n}(-b\mu)^{n-q}(c\nu)^{-n-\frac{1}{2}}(b\mu+2 c z\nu)^{q+1}\left(-\frac{(b\mu+2 c z\nu)^2}{c\nu}\right)^{\frac{1}{2}(-q-1)}\binom{n}{q}\Gamma\left(\frac{q+1}{2},-\frac{(b\mu+2 c z\nu)^2}{4 c\nu}\right)\right)/;\ n\in\mathbb{N}$$

01.03.21.0724.01

$$\int z^n\left(e^{b z}\right)^{\mu}\left(e^{c\sqrt{z}}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{c^2\nu^2}{4b\mu}-c\sqrt{z}\,\nu-b z\mu}\left(e^{\sqrt{z}\,c}\right)^{\nu}\left(e^{b z}\right)^{\mu} (b\mu)^{-2(n+1)}\sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h}4^k(c\nu)^{-h-k+2n}\left(2b\sqrt{z}\,\mu+c\nu\right)^{h+k}\left(-\frac{\left(2b\sqrt{z}\,\mu+c\nu\right)^2}{b\mu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k}\left(c\nu\left(2b\sqrt{z}\,\mu+c\nu\right)\Gamma\left(\frac{1}{2}(h+k+1),-\frac{\left(2b\sqrt{z}\,\mu+c\nu\right)^2}{4b\mu}\right)+ 2b\mu\sqrt{-\frac{\left(2b\sqrt{z}\,\mu+c\nu\right)^2}{b\mu}}\,\Gamma\left(\frac{1}{2}(h+k+2),-\frac{\left(2b\sqrt{z}\,\mu+c\nu\right)^2}{4b\mu}\right)\right)/;\ n\in\mathbb{N}$$

Involving $z^n\left(e^{d z+e}\right)^{\mu}\left(e^{c z^r}\right)^{\nu}$

01.03.21.0725.01

$$\int z^n\left(e^{d z+e}\right)^{\mu}\left(e^{c z^2}\right)^{\nu} dz = -\frac{1}{2\sqrt{c\nu}}\left(e^{-\frac{d^2\mu^2}{4c\nu}-z(d\mu+c z\nu)}\left(e^{e+d z}\right)^{\mu}\left(e^{c z^2}\right)^{\nu} \sum_{q=0}^{n} 2^{q-n}(-d\mu)^{n-q}(c\nu)^{-n-\frac{1}{2}}(d\mu+2 c z\nu)^{q+1}\left(-\frac{(d\mu+2 c z\nu)^2}{c\nu}\right)^{\frac{1}{2}(-q-1)}\binom{n}{q}\Gamma\left(\frac{q+1}{2},-\frac{(d\mu+2 c z\nu)^2}{4 c\nu}\right)\right)/;\ n\in\mathbb{N}$$

01.03.21.0726.01

$$\int z^n \left(e^{d z+e}\right)^\mu \left(e^{c\sqrt{z}}\right)^\nu \,dz = 2^{-2n-1} e^{-\frac{c^2\nu^2}{4d\mu}-c\sqrt{z}\,\nu-dz\mu} \left(e^{\sqrt{z}\,c}\right)^\nu \left(e^{e+dz}\right)^\mu (d\mu)^{-2(n+1)} \sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h} 4^k (c\nu)^{-h-k+2n} \left(2d\sqrt{z}\,\mu+c\nu\right)^{h+k} \left(-\frac{\left(2d\sqrt{z}\,\mu+c\nu\right)^2}{d\mu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left(c\nu\left(2d\sqrt{z}\,\mu+c\nu\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(2d\sqrt{z}\,\mu+c\nu\right)^2}{4d\mu}\right) + 2d\mu\sqrt{-\frac{\left(2d\sqrt{z}\,\mu+c\nu\right)^2}{d\mu}}\;\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(2d\sqrt{z}\,\mu+c\nu\right)^2}{4d\mu}\right)\right) /; n\in\mathbb{N}$$

Involving $z^{\alpha-1}\left(e^{b z^r}\right)^\mu \left(e^{c z^r}\right)^\nu$

01.03.21.0727.01

$$\int z^{\alpha-1}\left(e^{b z^r}\right)^\mu \left(e^{c z^r}\right)^\nu dz = -\frac{e^{-z^r(b\mu+c\nu)}\left(e^{b z^r}\right)^\mu \left(e^{c z^r}\right)^\nu z^\alpha \left(-z^r(b\mu+c\nu)\right)^{-\frac{\alpha}{r}}\Gamma\left(\frac{\alpha}{r}, -z^r(b\mu+c\nu)\right)}{r}$$

01.03.21.0728.01

$$\int z^n \left(e^{b z^2}\right)^\mu \left(e^{c z^2}\right)^\nu dz = -\frac{1}{2} e^{-z^2(b\mu+c\nu)} \left(e^{b z^2}\right)^\mu \left(e^{c z^2}\right)^\nu z^{n+1}\left(-z^2(b\mu+c\nu)\right)^{\frac{1}{2}(-n-1)}\Gamma\left(\frac{n+1}{2}, -z^2(b\mu+c\nu)\right) /; n\in\mathbb{Z}$$

01.03.21.0729.01

$$\int z^{2n}\left(e^{b z^2}\right)^\mu \left(e^{c z^2}\right)^\nu dz = -\frac{1}{2} e^{-z^2(b\mu+c\nu)} \left(e^{b z^2}\right)^\mu \left(e^{c z^2}\right)^\nu z^{2n+1}\left(-z^2(b\mu+c\nu)\right)^{\frac{1}{2}(-2n-1)} \left(\operatorname{erfc}\left(\sqrt{-z^2(b\mu+c\nu)}\right)\Gamma\left(n+\frac{1}{2}\right) + e^{z^2(b\mu+c\nu)}\sum_{j=0}^{n-1}\frac{\left(-z^2(b\mu+c\nu)\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} - e^{z^2(b\mu+c\nu)}\sum_{j=n}^{-1}\frac{\left(-z^2(b\mu+c\nu)\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}}\right) /; n\in\mathbb{Z}$$

01.03.21.0730.01

$$\int z^{2n+1}\left(e^{b z^2}\right)^\mu \left(e^{c z^2}\right)^\nu dz = -\frac{1}{2} e^{-z^2(b\mu+c\nu)} \left(e^{b z^2}\right)^\mu \left(e^{c z^2}\right)^\nu \left(-(b\mu+c\nu)\right)^{-n-1} \left(\frac{(-1)^n \operatorname{Ei}\left(z^2(b\mu+c\nu)\right)}{(-n-1)!} + e^{z^2(b\mu+c\nu)}\sum_{j=0}^{n}\frac{\left(-z^2(b\mu+c\nu)\right)^j}{(n+1)_{j-n}} - e^{z^2(b\mu+c\nu)}\sum_{j=n+1}^{-1}\frac{\left(-z^2(b\mu+c\nu)\right)^j}{(n+1)_{j-n}}\right) /; n\in\mathbb{Z}$$

01.03.21.0731.01

$$\int z^n \left(e^{\sqrt{z}\,b}\right)^\mu \left(e^{\sqrt{z}\,c}\right)^\nu dz = -2\, e^{-\sqrt{z}\,(b\mu+c\nu)} \left(e^{b\sqrt{z}}\right)^\mu \left(e^{c\sqrt{z}}\right)^\nu (b\mu+c\nu)^{-2(n+1)}\,\Gamma\left(2(n+1), -\sqrt{z}\,(b\mu+c\nu)\right) /; n\in\mathbb{Z}$$

01.03.21.0732.01

$$\int z^n \left(e^{\sqrt{z}\, b}\right)^{\mu} \left(e^{\sqrt{z}\, c}\right)^{\nu} dz = -2\, e^{-\sqrt{z}\,(b\mu+c\nu)} \left(e^{b\sqrt{z}}\right)^{\mu} \left(e^{c\sqrt{z}}\right)^{\nu} (b\mu+c\nu)^{-2(n+1)}$$

$$\left(-\frac{\text{Ei}\left(\sqrt{z}\,(b\mu+c\nu)\right)}{(-2(n+1))!} + e^{\sqrt{z}\,(b\mu+c\nu)} \sum_{j=0}^{2n+1} \frac{\left(-\sqrt{z}\,(b\mu+c\nu)\right)^j}{(2(n+1))_{j-2n-1}} - e^{\sqrt{z}\,(b\mu+c\nu)} \sum_{j=2(n+1)}^{-1} \frac{\left(-\sqrt{z}\,(b\mu+c\nu)\right)^j}{(2(n+1))_{j-2n-1}}\right) /;\, n \in \mathbb{Z}$$

Involving $z^n \left(e^{d z}\right)^{\mu} \left(e^{c z^r+g}\right)^{\nu}$

01.03.21.0733.01

$$\int z^n \left(e^{d z}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} dz = -\frac{1}{2\sqrt{c\nu}} \left(e^{-\frac{d^2\mu^2}{4c\nu} - z(d\mu+cz\nu)} \left(e^{d z}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu}\right.$$

$$\left.\sum_{q=0}^{n} 2^{q-n} (-d\mu)^{n-q} (c\nu)^{-n-\frac{1}{2}} (d\mu+2cz\nu)^{q+1} \left(-\frac{(d\mu+2cz\nu)^2}{c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d\mu+2cz\nu)^2}{4c\nu}\right)\right) /;\, n \in \mathbb{N}$$

01.03.21.0734.01

$$\int z^n \left(e^{d z}\right)^{\mu} \left(e^{c\sqrt{z}+g}\right)^{\nu} dz =$$

$$2^{-2n-1} e^{-\frac{c^2\nu^2}{4d\mu} - c\sqrt{z}\,\nu - dz\mu} \left(e^{\sqrt{z}\,c+g}\right)^{\nu} \left(e^{d z}\right)^{\mu} (d\mu)^{-2(n+1)} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k (c\nu)^{-h-k+2n} \left(2d\sqrt{z}\,\mu+c\nu\right)^{h+k}$$

$$\left(-\frac{\left(2d\sqrt{z}\,\mu+c\nu\right)^2}{d\mu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h} \binom{n}{k} \left(c\nu\left(2d\sqrt{z}\,\mu+c\nu\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(2d\sqrt{z}\,\mu+c\nu\right)^2}{4d\mu}\right) + \right.$$

$$\left. 2d\mu \sqrt{-\frac{\left(2d\sqrt{z}\,\mu+c\nu\right)^2}{d\mu}}\; \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(2d\sqrt{z}\,\mu+c\nu\right)^2}{4d\mu}\right)\right) /;\, n \in \mathbb{N}$$

Involving $z^n \left(e^{d z+e}\right)^{\mu} \left(e^{c z^r+g}\right)^{\nu}$

01.03.21.0735.01

$$\int z^n \left(e^{d z+e}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} dz = -\frac{1}{2\sqrt{c\nu}} \left(e^{-\frac{d^2\mu^2}{4c\nu} - z(d\mu+cz\nu)} \left(e^{e+d z}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu}\right.$$

$$\left.\sum_{q=0}^{n} 2^{q-n} (-d\mu)^{n-q} (c\nu)^{-n-\frac{1}{2}} (d\mu+2cz\nu)^{q+1} \left(-\frac{(d\mu+2cz\nu)^2}{c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d\mu+2cz\nu)^2}{4c\nu}\right)\right) /;\, n \in \mathbb{N}$$

01.03.21.0736.01

$$\int z^n \left(e^{d z+e}\right)^{\mu} \left(e^{c \sqrt{z} +g}\right)^{\nu} \, dz = 2^{-2n-1} e^{-\frac{c^2 \nu^2}{4 d \mu} - c \sqrt{z} \, \nu - d z \mu} \left(e^{\sqrt{z} \, c+g}\right)^{\nu} \left(e^{e+d z}\right)^{\mu} (d \mu)^{-2(n+1)} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k (c \nu)^{-h-k+2n} \left(2 d \sqrt{z} \, \mu + c \nu\right)^{h+k} \left(-\frac{\left(2 d \sqrt{z} \, \mu + c \nu\right)^2}{d \mu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h} \binom{n}{k} \left(c \nu \left(2 d \sqrt{z} \, \mu + c \nu\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(2 d \sqrt{z} \, \mu + c \nu\right)^2}{4 d \mu}\right) + 2 d \mu \sqrt{-\frac{\left(2 d \sqrt{z} \, \mu + c \nu\right)^2}{d \mu}} \, \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(2 d \sqrt{z} \, \mu + c \nu\right)^2}{4 d \mu}\right)\right) /; n \in \mathbb{N}$$

Involving $z^{\alpha-1}\left(e^{b z^r}\right)^{\mu} \left(e^{c z^r+g}\right)^{\nu}$

01.03.21.0737.01

$$\int z^{\alpha-1} \left(e^{b z^r}\right)^{\mu} \left(e^{c z^r+g}\right)^{\nu} dz = -\frac{e^{-z^r (b \mu + c \nu)} \left(e^{b z^r}\right)^{\mu} \left(e^{c z^r+g}\right)^{\nu} z^{\alpha} \left(-z^r (b \mu + c \nu)\right)^{-\frac{\alpha}{r}} \Gamma\left(\frac{\alpha}{r}, -z^r (b \mu + c \nu)\right)}{r}$$

01.03.21.0738.01

$$\int z^n \left(e^{b z^2}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} dz = -\frac{1}{2} e^{-z^2 (b \mu + c \nu)} \left(e^{b z^2}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} z^{n+1} \left(-z^2 (b \mu + c \nu)\right)^{\frac{1}{2}(-n-1)} \Gamma\left(\frac{n+1}{2}, -z^2 (b \mu + c \nu)\right) /; n \in \mathbb{Z}$$

01.03.21.0739.01

$$\int z^{2n} \left(e^{b z^2}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} dz = -\frac{1}{2} e^{-z^2 (b \mu + c \nu)} \left(e^{b z^2}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} z^{2n+1} \left(-z^2 (b \mu + c \nu)\right)^{\frac{1}{2}(-2n-1)} \left(\operatorname{erfc}\left(\sqrt{-z^2 (b \mu + c \nu)}\right) \Gamma\left(n+\frac{1}{2}\right) + e^{z^2 (b \mu + c \nu)} \sum_{j=0}^{n-1} \frac{\left(-z^2 (b \mu + c \nu)\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} - e^{z^2 (b \mu + c \nu)} \sum_{j=n}^{-1} \frac{\left(-z^2 (b \mu + c \nu)\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}}\right) /; n \in \mathbb{Z}$$

01.03.21.0740.01

$$\int z^{2n+1} \left(e^{b z^2}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} dz = -\frac{1}{2} e^{-z^2 (b \mu + c \nu)} \left(e^{b z^2}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} \left(-(b \mu + c \nu)\right)^{-n-1} \left(\frac{(-1)^n \operatorname{Ei}\left(z^2 (b \mu + c \nu)\right)}{(-n-1)!} + e^{z^2 (b \mu + c \nu)} \sum_{j=0}^{n} \frac{\left(-z^2 (b \mu + c \nu)\right)^j}{(n+1)_{j-n}} - e^{z^2 (b \mu + c \nu)} \sum_{j=n+1}^{-1} \frac{\left(-z^2 (b \mu + c \nu)\right)^j}{(n+1)_{j-n}}\right) /; n \in \mathbb{Z}$$

01.03.21.0741.01

$$\int z^n \left(e^{\sqrt{z} \, b}\right)^{\mu} \left(e^{\sqrt{z} \, c+g}\right)^{\nu} dz = -2 e^{-\sqrt{z} \, (b \mu + c \nu)} \left(e^{b \sqrt{z}}\right)^{\mu} \left(e^{\sqrt{z} \, c+g}\right)^{\nu} (b \mu + c \nu)^{-2(n+1)} \Gamma\left(2(n+1), -\sqrt{z} \, (b \mu + c \nu)\right) /; n \in \mathbb{Z}$$

01.03.21.0742.01

$$\int z^n \left(e^{\sqrt{z}\, b}\right)^{\mu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} dz = -2\, e^{-\sqrt{z}\,(b\mu+c\nu)} \left(e^{b\sqrt{z}}\right)^{\mu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} (b\mu+c\nu)^{-2(n+1)} \left(-\frac{\mathrm{Ei}\left(\sqrt{z}\,(b\mu+c\nu)\right)}{(-2(n+1))!} + e^{\sqrt{z}\,(b\mu+c\nu)} \sum_{j=0}^{2n+1} \frac{\left(-\sqrt{z}\,(b\mu+c\nu)\right)^j}{(2(n+1))_{j-2n-1}} - e^{\sqrt{z}\,(b\mu+c\nu)} \sum_{j=2(n+1)}^{-1} \frac{\left(-\sqrt{z}\,(b\mu+c\nu)\right)^j}{(2(n+1))_{j-2n-1}}\right) /;\, n \in \mathbb{Z}$$

Involving $z^{\alpha-1}\left(e^{b z^r+e}\right)^{\mu}\left(e^{c z^r+g}\right)^{\nu}$

01.03.21.0743.01

$$\int z^{\alpha-1} \left(e^{b z^r+e}\right)^{\mu} \left(e^{c z^r+g}\right)^{\nu} dz = -\frac{e^{-z^r (b\mu+c\nu)} \left(e^{b z^r+e}\right)^{\mu} \left(e^{c z^r+g}\right)^{\nu} z^{\alpha} \left(-z^r (b\mu+c\nu)\right)^{-\frac{\alpha}{r}} \Gamma\left(\frac{\alpha}{r}, -z^r (b\mu+c\nu)\right)}{r}$$

01.03.21.0744.01

$$\int z^n \left(e^{b z^2+e}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} dz = -\frac{1}{2} e^{-z^2 (b\mu+c\nu)} \left(e^{b z^2+e}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} z^{n+1} \left(-z^2 (b\mu+c\nu)\right)^{\frac{1}{2}(-n-1)} \Gamma\left(\frac{n+1}{2}, -z^2 (b\mu+c\nu)\right) /;\, n \in \mathbb{Z}$$

01.03.21.0745.01

$$\int z^{2n} \left(e^{b z^2+e}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} dz = -\frac{1}{2} e^{-z^2 (b\mu+c\nu)} \left(e^{b z^2+e}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} z^{2n+1} \left(-z^2 (b\mu+c\nu)\right)^{\frac{1}{2}(-2n-1)} \left(\mathrm{erfc}\left(\sqrt{-z^2 (b\mu+c\nu)}\right) \Gamma\left(n+\frac{1}{2}\right) + e^{z^2 (b\mu+c\nu)} \sum_{j=0}^{n-1} \frac{\left(-z^2 (b\mu+c\nu)\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}} - e^{z^2 (b\mu+c\nu)} \sum_{j=n}^{-1} \frac{\left(-z^2 (b\mu+c\nu)\right)^{j+\frac{1}{2}}}{\left(n+\frac{1}{2}\right)_{j-n+1}}\right) /;\, n \in \mathbb{Z}$$

01.03.21.0746.01

$$\int z^{2n+1} \left(e^{b z^2+e}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} dz = -\frac{1}{2} e^{-z^2 (b\mu+c\nu)} \left(e^{b z^2+e}\right)^{\mu} \left(e^{c z^2+g}\right)^{\nu} (-(b\mu+c\nu))^{-n-1} \left(\frac{(-1)^n\, \mathrm{Ei}\left(z^2 (b\mu+c\nu)\right)}{(-n-1)!} + e^{z^2 (b\mu+c\nu)} \sum_{j=0}^{n} \frac{\left(-z^2 (b\mu+c\nu)\right)^j}{(n+1)_{j-n}} - e^{z^2 (b\mu+c\nu)} \sum_{j=n+1}^{-1} \frac{\left(-z^2 (b\mu+c\nu)\right)^j}{(n+1)_{j-n}}\right) /;\, n \in \mathbb{Z}$$

01.03.21.0747.01

$$\int z^n \left(e^{\sqrt{z}\, b+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} dz = -2\, e^{-\sqrt{z}\,(b\mu+c\nu)} \left(e^{\sqrt{z}\, b+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} (b\mu+c\nu)^{-2(n+1)} \Gamma\left(2(n+1), -\sqrt{z}\,(b\mu+c\nu)\right) /;\, n \in \mathbb{Z}$$

01.03.21.0748.01

$$\int z^n \left(e^{\sqrt{z}\, b+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} dz = -2\, e^{-\sqrt{z}\,(b\mu+c\nu)} \left(e^{\sqrt{z}\, b+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+g}\right)^{\nu} (b\mu+c\nu)^{-2(n+1)} \left(-\frac{\mathrm{Ei}\left(\sqrt{z}\,(b\mu+c\nu)\right)}{(-2(n+1))!} + e^{\sqrt{z}\,(b\mu+c\nu)} \sum_{j=0}^{2n+1} \frac{\left(-\sqrt{z}\,(b\mu+c\nu)\right)^j}{(2(n+1))_{j-2n-1}} - e^{\sqrt{z}\,(b\mu+c\nu)} \sum_{j=2(n+1)}^{-1} \frac{\left(-\sqrt{z}\,(b\mu+c\nu)\right)^j}{(2(n+1))_{j-2n-1}}\right) /;\, n \in \mathbb{Z}$$

Involving $z^n\left(e^{d z}\right)^{\mu}\left(e^{c z^r+f z}\right)^{\nu}$

01.03.21.0749.01

$$\int z^n \left(e^{d z}\right)^{\mu} \left(e^{c z^2+f z}\right)^{\nu} \, dz = -\frac{1}{2 \sqrt{c \nu}} \left(e^{-\frac{(d \mu+f \nu)^2}{4 c \nu}-z (d \mu+f \nu+c z \nu)} \left(e^{z (f+c z)}\right)^{\nu} \left(e^{d z}\right)^{\mu} \sum_{q=0}^{n} 2^{q-n} (c \nu)^{-n-\frac{1}{2}} (-d \mu-f \nu)^{n-q} (d \mu+f \nu+2 c z \nu)^{q+1} \left(-\frac{(d \mu+f \nu+2 c z \nu)^2}{c \nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d \mu+f \nu+2 c z \nu)^2}{4 c \nu}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0750.01

$$\int z^n \left(e^{d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} \, dz = 2^{-2 n-1} e^{-\frac{c^2 \nu^2}{4 (d \mu+f \nu)}-f z \nu-c \sqrt{z}\, \nu-d z \mu} \left(e^{d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} (d \mu+f \nu)^{-2 (n+1)} \sum_{k=0}^{n} \sum_{h=0}^{k} (-1)^{k-h} 4^k (c \nu)^{-h-k+2 n} \left(c \nu+2 \sqrt{z}\, (d \mu+f \nu)\right)^{h+k} \left(-\frac{\left(c \nu+2 \sqrt{z}\, (d \mu+f \nu)\right)^2}{d \mu+f \nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h} \binom{n}{k} \left(c \nu \left(c \nu+2 \sqrt{z}\, (d \mu+f \nu)\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(c \nu+2 \sqrt{z}\, (d \mu+f \nu)\right)^2}{4 (d \mu+f \nu)}\right) + 2 \sqrt{-\frac{\left(c \nu+2 \sqrt{z}\, (d \mu+f \nu)\right)^2}{d \mu+f \nu}}\, (d \mu+f \nu) \Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(c \nu+2 \sqrt{z}\, (d \mu+f \nu)\right)^2}{4 (d \mu+f \nu)}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n \left(e^{d z+e}\right)^{\mu} \left(e^{c z^r+f z}\right)^{\nu}$

01.03.21.0751.01

$$\int z^n \left(e^{d z+e}\right)^{\mu} \left(e^{c z^2+f z}\right)^{\nu} \, dz = -\frac{1}{2 \sqrt{c \nu}} \left(e^{-\frac{(d \mu+f \nu)^2}{4 c \nu}-z (d \mu+f \nu+c z \nu)} \left(e^{z (f+c z)}\right)^{\nu} \left(e^{e+d z}\right)^{\mu} \sum_{q=0}^{n} 2^{q-n} (c \nu)^{-n-\frac{1}{2}} (-d \mu-f \nu)^{n-q} (d \mu+f \nu+2 c z \nu)^{q+1} \left(-\frac{(d \mu+f \nu+2 c z \nu)^2}{c \nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d \mu+f \nu+2 c z \nu)^2}{4 c \nu}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0752.01

$$\int z^n \left(e^{d z+e}\right)^\mu \left(e^{\sqrt{z}\, c+f z}\right)^\nu dz = 2^{-2n-1} e^{-\frac{c^2 \nu^2}{4(d\mu+f\nu)}-f z \nu-c\sqrt{z}\,\nu-d z \mu} \left(e^{e+d z}\right)^\mu \left(e^{\sqrt{z}\, c+f z}\right)^\nu (d\mu+f\nu)^{-2(n+1)} \sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h} 4^k (c\nu)^{-h-k+2n} \left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^{h+k} \left(-\frac{\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{d\mu+f\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left(c\nu\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{4(d\mu+f\nu)}\right) + 2\sqrt{-\frac{\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{d\mu+f\nu}}\,(d\mu+f\nu)\,\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{4(d\mu+f\nu)}\right)\right) /;\, n\in\mathbb{N}$$

Involving $z^n \left(e^{b z^r}\right)^\mu \left(e^{c z^r+f z}\right)^\nu$

01.03.21.0753.01

$$\int z^n \left(e^{b z^2}\right)^\mu \left(e^{c z^2+f z}\right)^\nu dz = -\frac{1}{2\sqrt{b\mu+c\nu}} \left(e^{-\frac{f^2\nu^2}{4(b\mu+c\nu)}-z(b z\mu+f\nu+c z\nu)} \left(e^{z(f+c z)}\right)^\nu \left(e^{b z^2}\right)^\mu \sum_{q=0}^{n} 2^{q-n} (-f\nu)^{n-q} (b\mu+c\nu)^{-n-\frac{1}{2}} (f\nu+2z(b\mu+c\nu))^{q+1} \left(-\frac{(f\nu+2z(b\mu+c\nu))^2}{b\mu+c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q}\Gamma\left(\frac{q+1}{2}, -\frac{(f\nu+2z(b\mu+c\nu))^2}{4(b\mu+c\nu)}\right)\right) /;\, n\in\mathbb{N}$$

01.03.21.0754.01

$$\int z^n \left(e^{\sqrt{z}\, b}\right)^\mu \left(e^{\sqrt{z}\, c+f z}\right)^\nu dz = 2^{-2n-1} e^{-\frac{(b\mu+c\nu)^2}{4 f\nu}-b\sqrt{z}\,\mu-f z\nu-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, b}\right)^\mu \left(e^{\sqrt{z}\, c+f z}\right)^\nu (f\nu)^{-2(n+1)} \sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h} 4^k (b\mu+c\nu)^{-h-k+2n} \left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^{h+k} \left(-\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{f\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left((b\mu+c\nu)\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{4f\nu}\right) + 2f\nu\sqrt{-\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{f\nu}}\,\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{4f\nu}\right)\right) /;\, n\in\mathbb{N}$$

Involving $z^n\left(e^{b z^r+e}\right)^{\mu}\left(e^{c z^r+f z}\right)^{\nu}$

01.03.21.0755.01

$$\int z^n\left(e^{b z^2+e}\right)^{\mu}\left(e^{c z^2+f z}\right)^{\nu} dz = -\frac{1}{2\sqrt{b\mu+c\nu}}\left(e^{-\frac{f^2\nu^2}{4(b\mu+c\nu)}-z(b z\mu+f\nu+c z\nu)}\left(e^{z(f+c z)}\right)^{\nu}\left(e^{b z^2+e}\right)^{\mu}\sum_{q=0}^{n}2^{q-n}(-f\nu)^{n-q}(b\mu+c\nu)^{-n-\frac{1}{2}}(f\nu+2z(b\mu+c\nu))^{q+1}\left(-\frac{(f\nu+2z(b\mu+c\nu))^2}{b\mu+c\nu}\right)^{\frac{1}{2}(-q-1)}\binom{n}{q}\Gamma\left(\frac{q+1}{2},-\frac{(f\nu+2z(b\mu+c\nu))^2}{4(b\mu+c\nu)}\right)\right)\;/;\;n\in\mathbb{N}$$

01.03.21.0756.01

$$\int z^n\left(e^{\sqrt{z}\,b+e}\right)^{\mu}\left(e^{\sqrt{z}\,c+f z}\right)^{\nu} dz = 2^{-2n-1}e^{-\frac{(b\mu+c\nu)^2}{4f\nu}-b\sqrt{z}\,\mu-f z\nu-c\sqrt{z}\,\nu}\left(e^{\sqrt{z}\,b+e}\right)^{\mu}\left(e^{\sqrt{z}\,c+f z}\right)^{\nu}(f\nu)^{-2(n+1)}\sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h}4^k(b\mu+c\nu)^{-h-k+2n}\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^{h+k}\left(-\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{f\nu}\right)^{\frac{1}{2}(-h-k-1)}\binom{k}{h}\binom{n}{k}\left((b\mu+c\nu)\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)\Gamma\left(\frac{1}{2}(h+k+1),-\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{4f\nu}\right)+2f\nu\sqrt{-\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{f\nu}}\;\Gamma\left(\frac{1}{2}(h+k+2),-\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{4f\nu}\right)\right)\;/;\;n\in\mathbb{N}$$

Involving $z^n\left(e^{b z^r+d z}\right)^{\mu}\left(e^{c z^r+f z}\right)^{\nu}$

01.03.21.0757.01

$$\int z^n\left(e^{b z^2+d z}\right)^{\mu}\left(e^{c z^2+f z}\right)^{\nu} dz = -\frac{1}{2\sqrt{b\mu+c\nu}}\left(e^{-\frac{(d\mu+f\nu)^2}{4(b\mu+c\nu)}-z(d\mu+b z\mu+f\nu+c z\nu)}\left(e^{z(d+b z)}\right)^{\mu}\left(e^{z(f+c z)}\right)^{\nu}\sum_{q=0}^{n}2^{q-n}(b\mu+c\nu)^{-n-\frac{1}{2}}(-d\mu-f\nu)^{n-q}(d\mu+f\nu+2z(b\mu+c\nu))^{q+1}\left(-\frac{(d\mu+f\nu+2z(b\mu+c\nu))^2}{b\mu+c\nu}\right)^{\frac{1}{2}(-q-1)}\binom{n}{q}\Gamma\left(\frac{q+1}{2},-\frac{(d\mu+f\nu+2z(b\mu+c\nu))^2}{4(b\mu+c\nu)}\right)\right)\;/;\;n\in\mathbb{N}$$

01.03.21.0758.01

$$\int z^n \left(e^{\sqrt{z}\, b+d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{(b\mu+c\nu)^2}{4(d\mu+f\nu)}-d z\mu-b\sqrt{z}\,\mu-f z\nu-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, b+d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z}\right)^{\nu} (d\mu+f\nu)^{-2(n+1)}$$

$$\sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h} 4^k (b\mu+c\nu)^{-h-k+2n} \left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^{h+k} \left(-\frac{\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{d\mu+f\nu}\right)^{\frac{1}{2}(-h-k-1)}$$

$$\binom{k}{h}\binom{n}{k}\left((b\mu+c\nu)\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{4(d\mu+f\nu)}\right)+\right.$$

$$\left.2\sqrt{-\frac{\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{d\mu+f\nu}}\,(d\mu+f\nu)\,\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{4(d\mu+f\nu)}\right)\right) /;\ n\in\mathbb{N}$$

Involving $z^n \left(e^{d z}\right)^{\mu} \left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0759.01

$$\int z^n \left(e^{d z}\right)^{\mu} \left(e^{c z^2+f z+g}\right)^{\nu} dz =$$

$$-\frac{1}{2\sqrt{c\nu}}\left(e^{-\frac{(d\mu+f\nu)^2}{4c\nu}-z(d\mu+f\nu+c z\nu)} \left(e^{d z}\right)^{\mu} \left(e^{g+z(f+c z)}\right)^{\nu} \sum_{q=0}^{n} 2^{q-n} (c\nu)^{-n-\frac{1}{2}} (-d\mu-f\nu)^{n-q} (d\mu+f\nu+2cz\nu)^{q+1}\right.$$

$$\left.\left(-\frac{(d\mu+f\nu+2cz\nu)^2}{c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q}\Gamma\left(\frac{q+1}{2}, -\frac{(d\mu+f\nu+2cz\nu)^2}{4c\nu}\right)\right) /;\ n\in\mathbb{N}$$

01.03.21.0760.01

$$\int z^n \left(e^{d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{c^2\nu^2}{4(d\mu+f\nu)}-f z\nu-c\sqrt{z}\,\nu-d z\mu} \left(e^{d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu} (d\mu+f\nu)^{-2(n+1)}$$

$$\sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h} 4^k (c\nu)^{-h-k+2n} \left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^{h+k} \left(-\frac{\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{d\mu+f\nu}\right)^{\frac{1}{2}(-h-k-1)}$$

$$\binom{k}{h}\binom{n}{k}\left(c\nu\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{4(d\mu+f\nu)}\right)+\right.$$

$$\left.2\sqrt{-\frac{\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{d\mu+f\nu}}\,(d\mu+f\nu)\,\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{4(d\mu+f\nu)}\right)\right) /;\ n\in\mathbb{N}$$

Involving $z^n \left(e^{d z+e}\right)^\mu \left(e^{c z^r+f z+g}\right)^\nu$

01.03.21.0761.01

$$\int z^n \left(e^{d z+e}\right)^\mu \left(e^{c z^2+f z+g}\right)^\nu dz = -\frac{1}{2\sqrt{c\nu}} \left(e^{-\frac{(d\mu+f\nu)^2}{4c\nu} - z(d\mu+f\nu+cz\nu)} \left(e^{e+dz}\right)^\mu \left(e^{g+z(f+cz)}\right)^\nu \sum_{q=0}^{n} 2^{q-n} (c\nu)^{-n-\frac{1}{2}} (-d\mu-f\nu)^{n-q} (d\mu+f\nu+2cz\nu)^{q+1} \left(-\frac{(d\mu+f\nu+2cz\nu)^2}{c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d\mu+f\nu+2cz\nu)^2}{4c\nu}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0762.01

$$\int z^n \left(e^{d z+e}\right)^\mu \left(e^{\sqrt{z}\, c+f z+g}\right)^\nu dz = 2^{-2n-1} e^{-\frac{c^2\nu^2}{4(d\mu+f\nu)} - f z\nu - c\sqrt{z}\,\nu - d z\mu} \left(e^{e+dz}\right)^\mu \left(e^{\sqrt{z}\, c+g+fz}\right)^\nu (d\mu+f\nu)^{-2(n+1)} \sum_{k=0}^{n}\sum_{h=0}^{k} (-1)^{k-h} 4^k (c\nu)^{-h-k+2n} \left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^{h+k} \left(-\frac{\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{d\mu+f\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left(c\nu\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right) \Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{4(d\mu+f\nu)}\right) + 2\sqrt{-\frac{\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{d\mu+f\nu}}\,(d\mu+f\nu)\,\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{4(d\mu+f\nu)}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n \left(e^{b z^r}\right)^\mu \left(e^{c z^r+f z+g}\right)^\nu$

01.03.21.0763.01

$$\int z^n \left(e^{b z^2}\right)^\mu \left(e^{c z^2+f z+g}\right)^\nu dz = -\frac{1}{2\sqrt{b\mu+c\nu}} \left(e^{-\frac{f^2\nu^2}{4(b\mu+c\nu)} - z(bz\mu+f\nu+cz\nu)} \left(e^{bz^2}\right)^\mu \left(e^{g+z(f+cz)}\right)^\nu \sum_{q=0}^{n} 2^{q-n} (-f\nu)^{n-q} (b\mu+c\nu)^{-n-\frac{1}{2}} (f\nu+2z(b\mu+c\nu))^{q+1} \left(-\frac{(f\nu+2z(b\mu+c\nu))^2}{b\mu+c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(f\nu+2z(b\mu+c\nu))^2}{4(b\mu+c\nu)}\right)\right) /; n \in \mathbb{N}$$

01.03.21.0764.01

$$\int z^n \left(e^{\sqrt{z}\, b}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{(b\mu+c\nu)^2}{4 f \nu}-b\sqrt{z}\,\mu-f z\nu-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, b}\right)^{\mu} \left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu} (f\nu)^{-2(n+1)} \sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h} 4^k (b\mu+c\nu)^{-h-k+2n} \left(b\mu+c\nu+2 f\sqrt{z}\,\nu\right)^{h+k} \left(-\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{f\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k}\left((b\mu+c\nu)\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{4f\nu}\right)+ 2f\nu\sqrt{-\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{f\nu}}\;\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{4f\nu}\right)\right) /; n\in\mathbb{N}$$

Involving $z^n\left(e^{b z^r+e}\right)^{\mu}\left(e^{c z^r+f z+g}\right)^{\nu}$

01.03.21.0765.01

$$\int z^n \left(e^{b z^2+e}\right)^{\mu} \left(e^{c z^2+f z+g}\right)^{\nu} dz = -\frac{1}{2\sqrt{b\mu+c\nu}}\left(e^{-\frac{f^2\nu^2}{4(b\mu+c\nu)}-z(b z\mu+f\nu+c z\nu)} \left(e^{b z^2+e}\right)^{\mu}\left(e^{g+z(f+c z)}\right)^{\nu}\sum_{q=0}^{n} 2^{q-n}(-f\nu)^{n-q}(b\mu+c\nu)^{-n-\frac{1}{2}}(f\nu+2z(b\mu+c\nu))^{q+1} \left(-\frac{(f\nu+2z(b\mu+c\nu))^2}{b\mu+c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q}\Gamma\left(\frac{q+1}{2}, -\frac{(f\nu+2z(b\mu+c\nu))^2}{4(b\mu+c\nu)}\right)\right) /; n\in\mathbb{N}$$

01.03.21.0766.01

$$\int z^n \left(e^{\sqrt{z}\, b+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{(b\mu+c\nu)^2}{4 f \nu}-b\sqrt{z}\,\mu-f z\nu-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, b+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu} (f\nu)^{-2(n+1)} \sum_{k=0}^{n}\sum_{h=0}^{k}(-1)^{k-h} 4^k (b\mu+c\nu)^{-h-k+2n} \left(b\mu+c\nu+2 f\sqrt{z}\,\nu\right)^{h+k} \left(-\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{f\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k}\left((b\mu+c\nu)\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{4f\nu}\right)+ 2f\nu\sqrt{-\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{f\nu}}\;\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b\mu+c\nu+2f\sqrt{z}\,\nu\right)^2}{4f\nu}\right)\right) /; n\in\mathbb{N}$$

Involving $z^n \left(e^{b z^r + d z}\right)^{\mu} \left(e^{c z^r + f z + g}\right)^{\nu}$

01.03.21.0767.01

$$\int z^n \left(e^{b z^2+d z}\right)^{\mu} \left(e^{c z^2+f z+g}\right)^{\nu} dz = -\frac{1}{2\sqrt{b\mu+c\nu}} e^{-\frac{(d\mu+f\nu)^2}{4(b\mu+c\nu)}-z(d\mu+bz\mu+f\nu+c\nu z)} \left(e^{z(d+bz)}\right)^{\mu} \left(e^{g+z(f+cz)}\right)^{\nu} \sum_{q=0}^{n} 2^{q-n} (b\mu+c\nu)^{-n-\frac{1}{2}} (-d\mu-f\nu)^{n-q} (d\mu+f\nu+2(b\mu+c\nu)z)^{q+1} \left(-\frac{(d\mu+f\nu+2(b\mu+c\nu)z)^2}{b\mu+c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d\mu+f\nu+2(b\mu+c\nu)z)^2}{4(b\mu+c\nu)}\right) /; n \in \mathbb{N}$$

01.03.21.0768.01

$$\int z^n \left(e^{\sqrt{z}\, b+d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+f z+g}\right)^{\nu} dz = 2^{-2n-1} e^{-\frac{(b\mu+c\nu)^2}{4(d\mu+f\nu)}-d z\mu-b\sqrt{z}\,\mu-f z\nu-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, b+d z}\right)^{\mu} \left(e^{\sqrt{z}\, c+g+f z}\right)^{\nu} (d\mu+f\nu)^{-2(n+1)} \sum_{k=0}^{n}\sum_{h=0}^{k} (-1)^{k-h} 4^k (b\mu+c\nu)^{-h-k+2n} \left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^{h+k} \left(-\frac{\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{d\mu+f\nu}\right)^{\frac{1}{2}(-h-k-1)} \binom{k}{h}\binom{n}{k} \left((b\mu+c\nu)\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{4(d\mu+f\nu)}\right) + 2\sqrt{-\frac{\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{d\mu+f\nu}}\,(d\mu+f\nu)\,\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{4(d\mu+f\nu)}\right)\right) /; n \in \mathbb{N}$$

Involving $z^n \left(e^{b z^r + d z + e}\right)^{\mu} \left(e^{c z^r + f z + g}\right)^{\nu}$

01.03.21.0769.01

$$\int z^n \left(e^{b z^2+d z+e}\right)^{\mu} \left(e^{c z^2+f z+g}\right)^{\nu} dz = -\frac{1}{2\sqrt{b\mu+c\nu}} e^{-\frac{(d\mu+f\nu)^2}{4(b\mu+c\nu)}-z(d\mu+bz\mu+f\nu+c\nu z)} \left(e^{e+z(d+bz)}\right)^{\mu} \left(e^{g+z(f+cz)}\right)^{\nu} \sum_{q=0}^{n} 2^{q-n} (b\mu+c\nu)^{-n-\frac{1}{2}} (-d\mu-f\nu)^{n-q} (d\mu+f\nu+2(b\mu+c\nu)z)^{q+1} \left(-\frac{(d\mu+f\nu+2(b\mu+c\nu)z)^2}{b\mu+c\nu}\right)^{\frac{1}{2}(-q-1)} \binom{n}{q} \Gamma\left(\frac{q+1}{2}, -\frac{(d\mu+f\nu+2(b\mu+c\nu)z)^2}{4(b\mu+c\nu)}\right) /; n \in \mathbb{N}$$

01.03.21.0770.01

$$\int z^n \left(e^{\sqrt{z}\, b+d\,z+e}\right)^{\mu} \left(e^{\sqrt{z}\, c+f\,z+g}\right)^{\nu} dz = 2^{-2n-1}\, e^{-\frac{(b\mu+c\nu)^2}{4(d\mu+f\nu)}-d\,z\,\mu-b\sqrt{z}\,\mu-f\,z\,\nu-c\sqrt{z}\,\nu} \left(e^{\sqrt{z}\, b+e+d\,z}\right)^{\mu} \left(e^{\sqrt{z}\, c+g+f\,z}\right)^{\nu} (d\mu+f\nu)^{-2(n+1)}$$
$$\sum_{k=0}^{n}\sum_{h=0}^{k} (-1)^{k-h}\, 4^k\, (b\mu+c\nu)^{-h-k+2n} \left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^{h+k} \left(-\frac{\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{d\mu+f\nu}\right)^{\frac{1}{2}(-h-k-1)}$$
$$\binom{k}{h}\binom{n}{k}\left((b\mu+c\nu)\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)\Gamma\left(\frac{1}{2}(h+k+1), -\frac{\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{4(d\mu+f\nu)}\right)+\right.$$
$$\left.2\sqrt{-\frac{\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{d\mu+f\nu}}\,(d\mu+f\nu)\,\Gamma\left(\frac{1}{2}(h+k+2), -\frac{\left(b\mu+c\nu+2\sqrt{z}\,(d\mu+f\nu)\right)^2}{4(d\mu+f\nu)}\right)\right) /;\ n\in\mathbb{N}$$

Involving rational functions of the direct function and a power function

Involving $\frac{z^n}{a+b\,e^{c\,z}}$

01.03.21.0771.01

$$\int \frac{z}{a+b\,e^{c\,z}}\,dz = \frac{c\,z\left(c\,z-2\log\left(\frac{e^{c\,z}\,b}{a}+1\right)\right)-2\,\mathrm{Li}_2\left(-\frac{b\,e^{c\,z}}{a}\right)}{2\,a\,c^2}$$

01.03.21.0772.01

$$\int \frac{z^2}{a+b\,e^{c\,z}}\,dz = \frac{c^2\left(c\,z-3\log\left(\frac{e^{c\,z}\,b}{a}+1\right)\right)z^2-6\,c\,\mathrm{Li}_2\left(-\frac{b\,e^{c\,z}}{a}\right)z+6\,\mathrm{Li}_3\left(-\frac{b\,e^{c\,z}}{a}\right)}{3\,a\,c^3}$$

01.03.21.0773.01

$$\int \frac{z^3}{a+b\,e^{c\,z}}\,dz = \frac{c^4\,z^4-4\,c^3\log\left(\frac{e^{c\,z}\,b}{a}+1\right)z^3-12\,c^2\,\mathrm{Li}_2\left(-\frac{b\,e^{c\,z}}{a}\right)z^2+24\,c\,\mathrm{Li}_3\left(-\frac{b\,e^{c\,z}}{a}\right)z-24\,\mathrm{Li}_4\left(-\frac{b\,e^{c\,z}}{a}\right)}{4\,a\,c^4}$$

01.03.21.0774.01

$$\int \frac{z^4}{a+b\,e^{c\,z}}\,dz =$$
$$\frac{1}{5\,a\,c^5}\left(c^5\,z^5-5\,c^4\log\left(\frac{e^{c\,z}\,b}{a}+1\right)z^4-20\,c^3\,\mathrm{Li}_2\left(-\frac{b\,e^{c\,z}}{a}\right)z^3+60\,c^2\,\mathrm{Li}_3\left(-\frac{b\,e^{c\,z}}{a}\right)z^2-120\,c\,\mathrm{Li}_4\left(-\frac{b\,e^{c\,z}}{a}\right)z+120\,\mathrm{Li}_5\left(-\frac{b\,e^{c\,z}}{a}\right)\right)$$

01.03.21.0801.01

$$\int \frac{z^n}{1-e^{c\,z}}\,dz = \frac{z^{n+1}}{n+1}+\sum_{j=0}^{n}\binom{n}{j}(-1)^j\,j!\,c^{-j-1}\,z^{n-j}\,\mathrm{Li}_{j+1}(e^{c\,z}) /;\ n\in\mathbb{N}^+$$

Involving $z^n\left(a+b\,c^{d\,z}\right)^{-m}$

01.03.21.0775.01

$$\int \frac{z}{(a+b\,c^{d\,z})^2}\,dz = \frac{1}{2\,a^2\,(b\,c^{d\,z}+a)\,d^2\log^2(c)}\Big((b\,c^{d\,z}+a)\,d^2\,z^2\log^2(c) - 2\,d\,z\left(b\,c^{d\,z}+(b\,c^{d\,z}+a)\log\left(\frac{b\,c^{d\,z}}{a}+1\right)\right)\log(c) + 2\,(b\,c^{d\,z}+a)\log\left(\frac{b\,c^{d\,z}}{a}+1\right) - 2\,(b\,c^{d\,z}+a)\,\mathrm{Li}_2\left(-\frac{b\,c^{d\,z}}{a}\right)\Big)$$

01.03.21.0776.01

$$\int \frac{z^2}{(a+b\,c^{d\,z})^2}\,dz = \frac{1}{3\,a^2\,(b\,c^{d\,z}+a)\,d^3\log^3(c)}\Big(d\,z\Big((b\,c^{d\,z}+a)\,d^2\,z^2\log^2(c) - 3\,d\,z\left(b\,c^{d\,z}+(b\,c^{d\,z}+a)\log\left(\frac{b\,c^{d\,z}}{a}+1\right)\right)\log(c) + 6\,(b\,c^{d\,z}+a)\log\left(\frac{b\,c^{d\,z}}{a}+1\right)\Big)\log(c) - 6\,(b\,c^{d\,z}+a)\,(d\,z\log(c)-1)\,\mathrm{Li}_2\left(-\frac{b\,c^{d\,z}}{a}\right) + 6\,(b\,c^{d\,z}+a)\,\mathrm{Li}_3\left(-\frac{b\,c^{d\,z}}{a}\right)\Big)$$

01.03.21.0777.01

$$\int \frac{z^3}{(a+b\,c^{d\,z})^2}\,dz = \frac{1}{4\,a^2}\left(z^4 - \frac{4\log\left(\frac{b\,c^{d\,z}}{a}+1\right)z^3}{d\log(c)} - \frac{4\,z^3}{d\log(c)} + \frac{4\,a\,z^3}{b\,d\log(c)\,c^{d\,z}+a\,d\log(c)} + \frac{12\log\left(\frac{b\,c^{d\,z}}{a}+1\right)z^2}{d^2\log^2(c)} - \frac{12\,(d\,z\log(c)-2)\,\mathrm{Li}_2\left(-\frac{b\,c^{d\,z}}{a}\right)z}{d^3\log^3(c)} + \frac{24\,(d\,z\log(c)-1)\,\mathrm{Li}_3\left(-\frac{b\,c^{d\,z}}{a}\right)}{d^4\log^4(c)} - \frac{24\,\mathrm{Li}_4\left(-\frac{b\,c^{d\,z}}{a}\right)}{d^4\log^4(c)}\right)$$

01.03.21.0778.01

$$\int \frac{z^4}{(a+b\,c^{d\,z})^2}\,dz = \frac{1}{5\,a^2}\left(z^5 - \frac{5\log\left(\frac{b\,c^{d\,z}}{a}+1\right)z^4}{d\log(c)} - \frac{5\,z^4}{d\log(c)} + \frac{5\,a\,z^4}{b\,d\log(c)\,c^{d\,z}+a\,d\log(c)} + \frac{20\log\left(\frac{b\,c^{d\,z}}{a}+1\right)z^3}{d^2\log^2(c)} - \frac{20\,(d\,z\log(c)-3)\,\mathrm{Li}_2\left(-\frac{b\,c^{d\,z}}{a}\right)z^2}{d^3\log^3(c)} + \frac{60\,(d\,z\log(c)-2)\,\mathrm{Li}_3\left(-\frac{b\,c^{d\,z}}{a}\right)z}{d^4\log^4(c)} - \frac{120\,\mathrm{Li}_4\left(-\frac{b\,c^{d\,z}}{a}\right)z}{d^4\log^4(c)} + \frac{120\,\mathrm{Li}_4\left(-\frac{b\,c^{d\,z}}{a}\right)}{d^5\log^5(c)} + \frac{120\,\mathrm{Li}_5\left(-\frac{b\,c^{d\,z}}{a}\right)}{d^5\log^5(c)}\right)$$

Involving $\frac{z^n\,e^{c\,z}}{a+b\,e^{c\,z}}$

01.03.21.0779.01

$$\int \frac{z\,e^{f\,z}}{b\,c^{d\,z}+a}\,dz = \frac{e^{f\,z}}{a}\left(\frac{z}{f\log(e)}\,{}_2F_1\left(1,\frac{f\log(e)}{d\log(c)};\frac{f\log(e)}{d\log(c)}+1;-\frac{b\,c^{d\,z}}{a}\right) - \frac{1}{d^2\log^2(c)}\,\Phi\left(-\frac{b\,c^{d\,z}}{a},2,\frac{f\log(e)}{d\log(c)}\right)\right)$$

01.03.21.0780.01

$$\int \frac{z\,e^{d\,z}}{a+b\,e^{c\,z}}\,dz = \frac{e^{d\,z}}{a\,c^2\,d}\left(c^2\,z\,{}_2F_1\left(1,\frac{d}{c};\frac{c+d}{c};-\frac{b\,e^{c\,z}}{a}\right) - d\,\Phi\left(-\frac{b\,e^{c\,z}}{a},2,\frac{d}{c}\right)\right)$$

01.03.21.0781.01

$$\int \frac{z\, e^{2 c z}}{a + b\, e^{c z}}\, dz = \frac{b\, e^{c z}\, (c z - 1) - a\, c\, z \log\left(\frac{e^{c z}\, b}{a} + 1\right) - a \operatorname{Li}_2\left(-\frac{b\, e^{c z}}{a}\right)}{b^2\, c^2}$$

01.03.21.0782.01

$$\int \frac{z\, e^{-2 c z}}{a + b\, e^{c z}}\, dz = \frac{e^{-2 c z}}{4\, a^3\, c^2} \left(-4\, c\, e^{2 c z}\, z \log\left(\frac{e^{-c z}\, a}{b} + 1\right) b^2 + 4\, e^{2 c z} \operatorname{Li}_2\left(-\frac{a\, e^{-c z}}{b}\right) b^2 - a\, (2\, c\, z\, a + a - 4\, b\, e^{c z}\, (c z + 1))\right)$$

01.03.21.0783.01

$$\int \frac{z\, e^{c z}}{a + b\, e^{c z}}\, dz = \frac{c\, z \log\left(\frac{e^{c z}\, b}{a} + 1\right) + \operatorname{Li}_2\left(-\frac{b\, e^{c z}}{a}\right)}{b\, c^2}$$

01.03.21.0784.01

$$\int \frac{z^2\, e^{f z}}{b\, c^{d z} + a}\, dz = \frac{1}{a\, d^3\, f \log^3(c) \log(e)}\, e^{f z} \left(2\, f\, \Phi\left(-\frac{b\, c^{d z}}{a}, 3, \frac{f \log(e)}{d \log(c)}\right) \log(e) + \right.$$
$$\left. d\, z \log(c) \left(d^2\, z\; {}_2F_1\left(1, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)} + 1; -\frac{b\, c^{d z}}{a}\right) \log^2(c) - 2\, f\, \Phi\left(-\frac{b\, c^{d z}}{a}, 2, \frac{f \log(e)}{d \log(c)}\right) \log(e)\right)\right)$$

01.03.21.0785.01

$$\int \frac{z^2\, e^{c z}}{a + b\, e^{c z}}\, dz = \frac{c^2 \log\left(\frac{e^{c z}\, b}{a} + 1\right) z^2 + 2\, c \operatorname{Li}_2\left(-\frac{b\, e^{c z}}{a}\right) z - 2 \operatorname{Li}_3\left(-\frac{b\, e^{c z}}{a}\right)}{b\, c^3}$$

01.03.21.0786.01

$$\int \frac{z^3\, e^{f z}}{b\, c^{d z} + a}\, dz = \frac{1}{a\, d^4\, f \log^4(c) \log(e)}\, e^{f z}$$
$$\left(d\, z \log(c) \left(6\, f\, \Phi\left(-\frac{b\, c^{d z}}{a}, 3, \frac{f \log(e)}{d \log(c)}\right) \log(e) + d\, z \log(c) \left(d^2\, z\; {}_2F_1\left(1, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)} + 1; -\frac{b\, c^{d z}}{a}\right) \log^2(c) - \right.\right.\right.$$
$$\left.\left.\left. 3\, f\, \Phi\left(-\frac{b\, c^{d z}}{a}, 2, \frac{f \log(e)}{d \log(c)}\right) \log(e)\right)\right) - 6\, f\, \Phi\left(-\frac{b\, c^{d z}}{a}, 4, \frac{f \log(e)}{d \log(c)}\right) \log(e)\right)$$

01.03.21.0787.01

$$\int \frac{z^3\, e^{c z}}{a + b\, e^{c z}}\, dz = \frac{c^3 \log\left(\frac{e^{c z}\, b}{a} + 1\right) z^3 + 3\, c^2 \operatorname{Li}_2\left(-\frac{b\, e^{c z}}{a}\right) z^2 - 6\, c \operatorname{Li}_3\left(-\frac{b\, e^{c z}}{a}\right) z + 6 \operatorname{Li}_4\left(-\frac{b\, e^{c z}}{a}\right)}{b\, c^4}$$

01.03.21.0788.01

$$\int \frac{z^4\, e^{c z}}{a + b\, e^{c z}}\, dz =$$
$$\frac{1}{b\, c^5} \left(c^4 \log\left(\frac{e^{c z}\, b}{a} + 1\right) z^4 + 4\, c^3 \operatorname{Li}_2\left(-\frac{b\, e^{c z}}{a}\right) z^3 - 12\, c^2 \operatorname{Li}_3\left(-\frac{b\, e^{c z}}{a}\right) z^2 + 24\, c \operatorname{Li}_4\left(-\frac{b\, e^{c z}}{a}\right) z - 24 \operatorname{Li}_5\left(-\frac{b\, e^{c z}}{a}\right)\right)$$

Involving $\frac{z^n}{a\, e^{2 d z} + b\, e^{d z} + c}$

01.03.21.0789.01

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

01.03.21.0790.01

$$\int \frac{z^2}{a e^{2 d z} + b e^{d z} + c} \, dz = \frac{1}{6 c \sqrt{b^2 - 4 a c}\, d^3} \left(2 \sqrt{b^2 - 4 a c}\, d^3 z^3 - 3 b d^2 \log\left(\frac{2 e^{d z} a}{b - \sqrt{b^2 - 4 a c}} + 1 \right) z^2 - 3 \sqrt{b^2 - 4 a c}\, d^2 \log\left(\frac{2 e^{d z} a}{b - \sqrt{b^2 - 4 a c}} + 1 \right) z^2 + 3 b d^2 \log\left(\frac{2 e^{d z} a}{b + \sqrt{b^2 - 4 a c}} + 1 \right) z^2 - 3 \sqrt{b^2 - 4 a c}\, d^2 \log\left(\frac{2 e^{d z} a}{b + \sqrt{b^2 - 4 a c}} + 1 \right) z^2 - 6 \left(b + \sqrt{b^2 - 4 a c}\right) d\, \mathrm{Li}_2\left(\frac{2 a e^{d z}}{\sqrt{b^2 - 4 a c} - b} \right) z + 6 \left(b - \sqrt{b^2 - 4 a c}\right) d\, \mathrm{Li}_2\left(-\frac{2 a e^{d z}}{b + \sqrt{b^2 - 4 a c}} \right) z + 6 b\, \mathrm{Li}_3\left(\frac{2 a e^{d z}}{\sqrt{b^2 - 4 a c} - b} \right) + 6 \sqrt{b^2 - 4 a c}\, \mathrm{Li}_3\left(\frac{2 a e^{d z}}{\sqrt{b^2 - 4 a c} - b} \right) - 6 b\, \mathrm{Li}_3\left(-\frac{2 a e^{d z}}{b + \sqrt{b^2 - 4 a c}} \right) + 6 \sqrt{b^2 - 4 a c}\, \mathrm{Li}_3\left(-\frac{2 a e^{d z}}{b + \sqrt{b^2 - 4 a c}} \right) \right)$$

01.03.21.0791.01

$$\int \frac{z^3}{a e^{2 d z} + b e^{d z} + c} \, dz = -\frac{1}{2 \sqrt{b^2 - 4 a c}} \left(a \left(\frac{z^4}{\sqrt{b^2 - 4 a c} - b} + \frac{z^4}{b + \sqrt{b^2 - 4 a c}} + \frac{4 \log\left(\frac{2 e^{d z} a}{b - \sqrt{b^2 - 4 a c}} + 1 \right) z^3}{\left(b - \sqrt{b^2 - 4 a c}\right) d} - \frac{4 \log\left(\frac{2 e^{d z} a}{b + \sqrt{b^2 - 4 a c}} + 1 \right) z^3}{\left(b + \sqrt{b^2 - 4 a c}\right) d} + \frac{12\, \mathrm{Li}_2\left(\frac{2 a e^{d z}}{\sqrt{b^2 - 4 a c} - b} \right) z^2}{\left(b - \sqrt{b^2 - 4 a c}\right) d^2} - \frac{12\, \mathrm{Li}_2\left(-\frac{2 a e^{d z}}{b + \sqrt{b^2 - 4 a c}} \right) z^2}{\left(b + \sqrt{b^2 - 4 a c}\right) d^2} + \frac{24\, \mathrm{Li}_3\left(\frac{2 a e^{d z}}{\sqrt{b^2 - 4 a c} - b} \right) z}{\left(\sqrt{b^2 - 4 a c} - b \right) d^3} + \frac{24\, \mathrm{Li}_3\left(-\frac{2 a e^{d z}}{b + \sqrt{b^2 - 4 a c}} \right) z}{\left(b + \sqrt{b^2 - 4 a c}\right) d^3} + \frac{24\, \mathrm{Li}_4\left(\frac{2 a e^{d z}}{\sqrt{b^2 - 4 a c} - b} \right)}{\left(b - \sqrt{b^2 - 4 a c}\right) d^4} - \frac{24\, \mathrm{Li}_4\left(-\frac{2 a e^{d z}}{b + \sqrt{b^2 - 4 a c}} \right)}{\left(b + \sqrt{b^2 - 4 a c}\right) d^4} \right) \right)$$

Involving algebraic functions of the direct function and a power function

Involving $z^n (a + b c^{d z})^\beta$

01.03.21.0792.01

$$\int z \left(a + b c^{d z}\right)^\beta \, dz = \frac{1}{d^2 \beta^2 \log^2(c)} \left(\frac{a c^{-d z}}{b} + 1\right)^{-\beta} \left(b c^{d z} + a\right)^\beta \left(d z \beta \, {}_2F_1\left(-\beta, -\beta; 1 - \beta; -\frac{a c^{-d z}}{b}\right) \log(c) - {}_3F_2\left(-\beta, -\beta, -\beta; 1 - \beta, 1 - \beta; -\frac{a c^{-d z}}{b}\right)\right)$$

01.03.21.0793.01

$$\int z^2 \left(a + b c^{d z}\right)^\beta \, dz = \frac{1}{d^3 \beta^3 \log^3(c)} \left(\left(\frac{a c^{-d z}}{b} + 1\right)^{-\beta} \left(b c^{d z} + a\right)^\beta \left(2 \, {}_4F_3\left(-\beta, -\beta, -\beta, -\beta; 1 - \beta, 1 - \beta, 1 - \beta; -\frac{a c^{-d z}}{b}\right) + d z \beta \log(c) \left(d z \beta \, {}_2F_1\left(-\beta, -\beta; 1 - \beta; -\frac{a c^{-d z}}{b}\right) \log(c) - 2 \, {}_3F_2\left(-\beta, -\beta, -\beta; 1 - \beta, 1 - \beta; -\frac{a c^{-d z}}{b}\right)\right)\right)\right)$$

01.03.21.0794.01

$$\int z^3 \left(a + b c^{d z}\right)^\beta \, dz = \frac{1}{d^4 \beta^4 \log^4(c)} \left(\left(\frac{a c^{-d z}}{b} + 1\right)^{-\beta} \left(b c^{d z} + a\right)^\beta \left(d z \beta \log(c) \left(6 \, {}_4F_3\left(-\beta, -\beta, -\beta, -\beta; 1 - \beta, 1 - \beta, 1 - \beta; -\frac{a c^{-d z}}{b}\right) + d z \beta \log(c) \left(d z \beta \, {}_2F_1\left(-\beta, -\beta; 1 - \beta; -\frac{a c^{-d z}}{b}\right) \log(c) - 3 \, {}_3F_2\left(-\beta, -\beta, -\beta; 1 - \beta, 1 - \beta; -\frac{a c^{-d z}}{b}\right)\right)\right) - 6 \, {}_5F_4\left(-\beta, -\beta, -\beta, -\beta, -\beta; 1 - \beta, 1 - \beta, 1 - \beta, 1 - \beta; -\frac{a c^{-d z}}{b}\right)\right)\right)$$

Involving $z^n e^{f z} (a + b c^{d z})^\beta$

01.03.21.0795.01

$$\int z e^{f z} \left(a + b c^{d z}\right)^\beta \, dz = \frac{1}{f^2 \log^2(e)} \left(\left(b c^{d z} + a\right)^\beta \left(\frac{b c^{d z}}{a} + 1\right)^{-\beta} e^{f z} \left(f z \, {}_2F_1\left(-\beta, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)} + 1; -\frac{b c^{d z}}{a}\right) \log(e) - {}_3F_2\left(-\beta, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)} + 1, \frac{f \log(e)}{d \log(c)} + 1; -\frac{b c^{d z}}{a}\right)\right)\right)$$

01.03.21.0796.01

$$\int z^2 e^{f z} \left(a+b c^{d z}\right)^\beta \, dz = \frac{1}{f^3 \log^3(e)} \left(\left(b c^{d z}+a\right)^\beta \left(\frac{b c^{d z}}{a}+1\right)^{-\beta} e^{f z} \left(2\, {}_4F_3\left(-\beta, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1; -\frac{b c^{d z}}{a}\right)+ f z \log(e) \left(f z\, {}_2F_1\left(-\beta, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)}+1; -\frac{b c^{d z}}{a}\right) \log(e) - 2\, {}_3F_2\left(-\beta, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1; -\frac{b c^{d z}}{a}\right)\right)\right)\right)$$

01.03.21.0797.01

$$\int z^3 e^{f z} \left(a+b c^{d z}\right)^\beta \, dz = \frac{1}{f^4 \log^4(e)} \left(\left(b c^{d z}+a\right)^\beta \left(\frac{b c^{d z}}{a}+1\right)^{-\beta} e^{f z} \left(f z \log(e) \left(6\, {}_4F_3\left(-\beta, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1; -\frac{b c^{d z}}{a}\right)+ f z \log(e) \left(f z\, {}_2F_1\left(-\beta, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)}+1; -\frac{b c^{d z}}{a}\right) \log(e) - 3\, {}_3F_2\left(-\beta, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1; -\frac{b c^{d z}}{a}\right)\right)\right) - 6\, {}_5F_4\left(-\beta, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1; -\frac{b c^{d z}}{a}\right)\right)\right)$$

01.03.21.0798.01

$$\int z^4 e^{f z} \left(a+b c^{d z}\right)^\beta \, dz = \frac{1}{f^5 \log^5(e)} \left(\left(b c^{d z}+a\right)^\beta \left(\frac{b c^{d z}}{a}+1\right)^{-\beta} e^{f z} \left(24\, {}_6F_5\left(-\beta, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1; -\frac{b c^{d z}}{a}\right)+ f z \log(e) \left(f z \log(e) \left(12\, {}_4F_3\left(-\beta, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1; -\frac{b c^{d z}}{a}\right)+ f z \log(e) \left(f z\, {}_2F_1\left(-\beta, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)}+1; -\frac{b c^{d z}}{a}\right) \log(e) - 4\, {}_3F_2\left(-\beta, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1; -\frac{b c^{d z}}{a}\right)\right)\right) - 24\, {}_5F_4\left(-\beta, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}, \frac{f \log(e)}{d \log(c)}; \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1, \frac{f \log(e)}{d \log(c)}+1; -\frac{b c^{d z}}{a}\right)\right)\right)\right)$$

Definite integration

For the direct function itself

01.03.21.0028.01

$$\int_0^\infty e^{-t}\, dt = 1$$

01.03.21.0029.01

$$\int_0^\infty e^{-t^2}\, dt = \frac{\sqrt{\pi}}{2}$$

01.03.21.0030.01

$$\int_0^\infty e^{-a t^2-\frac{b}{t^2}}\, dt = \frac{\sqrt{b}\, \sqrt{\pi}}{2 \sqrt{a b}\, e^{2 \sqrt{a b}}} \;/;\; \text{Re}(a) > 0 \bigwedge \text{Re}(b) > 0$$

01.03.21.0031.01

$$\int_0^\infty t^k\, e^{-t}\, dt = \Gamma(k+1) \;/;\; \text{Re}(k) > -1$$

01.03.21.0032.01

$$\int_a^\infty t^k\, e^{-b t}\, dt = b^{-k-1}\, \Gamma(k+1,\, a b) \;/;\; a > 0 \bigwedge \text{Re}(b) > 0$$

01.03.21.0802.01

$$\int_0^\infty \frac{e^{t x-\frac{t^3}{12}}}{\sqrt{t}}\, dt = \pi^{3/2} \left(\text{Ai}(x)^2 + \text{Bi}(x)^2\right)$$

Involving the direct function

01.03.21.0033.01

$$\int_0^\infty \frac{t^k}{e^t+1}\, dt = \frac{\left(-1+2^k\right) \Gamma(k+1)\, \zeta(k+1)}{2^k} \;/;\; \text{Re}(k) > -1$$

01.03.21.0034.01

$$\int_0^\infty \frac{t^k}{e^t-1}\, dt = \Gamma(k+1)\, \zeta(k+1) \;/;\; \text{Re}(k) > 0$$

01.03.21.0799.01

$$\int_0^\infty \frac{t}{\left(t^2+1\right)^{k+1} \left(e^{2 \pi q t}-1\right)}\, dt = -\frac{1}{4 k} - \frac{1}{2^{2 k+2}\, q} \binom{2 k}{k} + \frac{1}{k\, 2^{2 k}} \sum_{j=1}^k \frac{(-1)^{j+1}}{(j-1)!} \binom{2 k-j-1}{k-j} 2^{j-1}\, q^j\, \psi^{(j)}(q) \;/;\; k \in \mathbb{N} \bigwedge \text{Re}(q) > 0$$

Multiple integrals

01.03.21.0800.01

$$\int_0^1 \int_0^1 (1-s+s t)^n\, e^{-z s t}\, ds\, dt = \frac{e^z\, \Gamma(n+1,\, z)\, (\Gamma(0,\, z) + \log(z) + \gamma)}{z^{n+1}} - \frac{n!}{z^{n+1}} \sum_{k=1}^n \frac{z^k\, H_k}{k!} \;/;\; z \in \mathbb{R} \bigwedge z > 0 \bigwedge \lambda \in \mathbb{N}$$

Integral transforms

Fourier exp transforms

01.03.22.0001.01

$$\mathcal{F}_t\left[e^{-t}\right](z) = \sqrt{2 \pi}\, \delta(z + i)$$

01.03.22.0010.01

$$\mathcal{F}_t\left[e^{i a t}\right](x) = \sqrt{2\pi}\ \delta(a+x) /; a \in \mathbb{R}$$

01.03.22.0011.01

$$\mathcal{F}_t\left[e^{-t}\,\theta(t)\right](x) = \frac{i}{\sqrt{2\pi}\ (i+x)}$$

Inverse Fourier exp transforms

01.03.22.0002.01

$$\mathcal{F}_t^{-1}\left[e^{-t}\right](z) == \sqrt{2\pi}\ \delta(z-i)$$

Fourier cos transforms

01.03.22.0003.01

$$\mathcal{F}c_t\left[e^{-t}\right](z) == \sqrt{\frac{2}{\pi}}\ \frac{1}{z^2+1}$$

Fourier sin transforms

01.03.22.0004.01

$$\mathcal{F}s_t\left[e^{-t}\right](z) == \sqrt{\frac{2}{\pi}}\ \frac{z}{z^2+1}$$

Laplace transforms

01.03.22.0005.01

$$\mathcal{L}_t\left[e^{t}\right](z) == \frac{1}{z-1} /; \operatorname{Re}(z) > 1$$

01.03.22.0006.01

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

Inverse Laplace transforms

01.03.22.0007.01

$$\mathcal{L}_t^{-1}\left[e^{-t}\right](p) == \delta(p-1)\,\theta(p-1)$$

Mellin transforms

01.03.22.0008.01

$$\mathcal{M}_t\left[e^{-t}\right](z) == \Gamma(z) /; \operatorname{Re}(z) > 0$$

Hankel transforms

01.03.22.0009.01

$$\mathcal{H}_{t;\nu}\left[e^{-t}\right](z) == \frac{2^{-\nu}\, z^{\nu+\frac{1}{2}}\,\Gamma\left(\nu+\frac{3}{2}\right)}{\Gamma(\nu+1)}\ {}_2F_1\left(\frac{\nu}{2}+\frac{3}{4}, \frac{\nu}{2}+\frac{5}{4}; \nu+1; -z^2\right) /; z > 0 \bigwedge \operatorname{Re}(\nu) > -\frac{3}{2}$$

Summation

Infinite summation

01.03.23.0001.01

$$\sum_{k=1}^{\infty} e^{-k z} = \frac{1}{e^z - 1} \;/;\; \operatorname{Re}(z) > 0$$

01.03.23.0002.01

$$\sum_{k=1}^{\infty} (-1)^{k-1} e^{-k z} = \frac{1}{e^z + 1} \;/;\; \operatorname{Re}(z) > 0$$

01.03.23.0003.01

$$\sum_{k=1}^{\infty} e^{-(2k-1) z} = \frac{e^z}{e^{2z} - 1} \;/;\; \operatorname{Re}(z) > 0$$

01.03.23.0004.01

$$\sum_{k=1}^{\infty} (-1)^{k-1} e^{-(2k-1) z} = \frac{e^z}{1 + e^{2z}} \;/;\; \operatorname{Re}(z) > 0$$

01.03.23.0005.01

$$\sum_{k=1}^{\infty} \frac{e^{k z}}{k} = -\log(1 - e^z) \;/;\; \operatorname{Re}(z) < 0$$

01.03.23.0006.01

$$\sum_{k=1}^{\infty} \frac{(-1)^{k-1} e^{k z}}{k} = \log(1 + e^z) \;/;\; \operatorname{Re}(z) \leq 0$$

01.03.23.0007.01

$$\sum_{k=0}^{\infty} z^k e^{k w} = \frac{1}{1 - e^w z} \;/;\; \log(|z|) + \operatorname{Re}(w) < 0$$

01.03.23.0008.01

$$\sum_{k=0}^{\infty} \frac{e^{k z}}{k!} = e^{e^z}$$

01.03.23.0009.01

$$\sum_{k=0}^{\infty} \frac{z^k e^{k x}}{k!} = e^{e^x z}$$

01.03.23.0010.01

$$\sum_{k=1}^{\infty} \frac{e^{k w}}{k^2} = \operatorname{Li}_2(e^w) \;/;\; \operatorname{Re}(w) \leq 0$$

01.03.23.0011.01

$$\sum_{k=1}^{\infty} \frac{(-1)^{k-1} e^{k w}}{k^2} = -\operatorname{Li}_2(-e^w) \;/;\; \operatorname{Re}(w) \leq 0$$

01.03.23.0012.01

$$\sum_{k=1}^{\infty} \frac{e^{k w}}{a^2 + k^2} = -\frac{i\, e^w}{2a} \left(\Phi(e^w, 1, 1 - i a) - \Phi(e^w, 1, 1 + i a)\right) \;/;\; \operatorname{Re}(w) \leq 0$$

01.03.23.0013.01

$$\sum_{k=1}^{\infty} \frac{(-1)^k e^{k w}}{a^2+k^2} = \frac{i e^w}{2 a} \left(\Phi(-e^w, 1, 1-i a)-\Phi(-e^w, 1, 1+i a)\right) /; \operatorname{Re}(w) \leq 0$$

01.03.23.0014.01

$$\sum_{k=1}^{\infty} e^{-k^2 w} = \frac{1}{2} \left(\vartheta_3(0, e^{-w})-1\right) /; \operatorname{Re}(w) > 0$$

01.03.23.0015.01

$$\sum_{k=1}^{\infty} (-1)^{k-1} e^{-k^2 w} = \frac{1}{2} \left(1-\vartheta_4(0, e^{-w})\right) /; \operatorname{Re}(w) > 0$$

01.03.23.0016.01

$$\sum_{k=1}^{\infty} e^{-(2 k-1)^2 w} = \frac{1}{2} \vartheta_2\left(0, e^{-4 w}\right) /; \operatorname{Re}(w) > 0$$

01.03.23.0017.01

$$\sum_{k=1}^{\infty} \frac{k}{e^{2 k \pi}-1} = \frac{1}{24}-\frac{1}{8 \pi}$$

Operations

Limit operation

01.03.25.0001.01

$$\lim_{z \to \infty} z^a e^{-z} = 0$$

01.03.25.0002.01

$$\lim_{z \to \infty} \log(z) e^{-z} = 0$$

01.03.25.0003.01

$$\lim_{z \to \infty} z! \, e^{-z} = \infty$$

Representations through more general functions

Through hypergeometric functions

Involving ${}_pF_q$

01.03.26.0001.01

$$e^z = {}_0F_0(;;z)$$

Involving ${}_1F_1$

01.03.26.0002.01

$$e^z = {}_1F_1(a; a; z)$$

01.03.26.0003.01

$$e^z = \sum_{k=0}^{n} \frac{z^k}{k!} + \frac{z^{n+1}}{(n+1)!} \, {}_1F_1(1; n+2; z) /; n \in \mathbb{N}$$

Through Meijer *G*

Classical cases for the direct function itself

01.03.26.0004.01

$$e^z = G_{0,1}^{1,0}(-z \mid 0)$$

01.03.26.0101.01

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

01.03.26.0007.01

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

01.03.26.0008.01

$$e^{-\sqrt{z}} = \frac{1}{\sqrt{\pi}}\, G_{0,2}^{2,0}\left(\frac{z}{4} \,\middle|\, 0, \frac{1}{2}\right)$$

01.03.26.0115.01

$$e^{\sqrt{z}} = 2\,\pi^{3/2}\, G_{2,4}^{2,0}\left(\frac{z}{4} \,\middle|\, \begin{matrix} \frac{1}{4}, \frac{3}{4} \\ 0, \frac{1}{2}, \frac{1}{4}, \frac{3}{4} \end{matrix}\right)$$

01.03.26.0102.01

$$e^{-\sqrt[3]{z}} = \frac{\sqrt{3}}{2\,\pi}\, G_{0,3}^{3,0}\left(\frac{z}{27} \,\middle|\, 0, \frac{1}{3}, \frac{2}{3}\right)$$

01.03.26.0116.01

$$e^{\sqrt[3]{z}} = 2\,\sqrt{3}\,\pi^2\, G_{3,6}^{3,0}\left(\frac{z}{27} \,\middle|\, \begin{matrix} \frac{1}{6}, \frac{1}{2}, \frac{5}{6} \\ 0, \frac{1}{3}, \frac{2}{3}, \frac{1}{6}, \frac{1}{2}, \frac{5}{6} \end{matrix}\right)$$

01.03.26.0103.01

$$e^{-\sqrt[4]{z}} = \frac{1}{\sqrt{2}\,\pi^{3/2}}\, G_{0,4}^{4,0}\left(\frac{z}{256} \,\middle|\, 0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}\right)$$

01.03.26.0117.01

$$e^{\sqrt[4]{z}} = 4\,\sqrt{2}\,\pi^{5/2}\, G_{4,8}^{4,0}\left(\frac{z}{256} \,\middle|\, \begin{matrix} \frac{1}{8}, \frac{3}{8}, \frac{5}{8}, \frac{7}{8} \\ 0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, \frac{1}{8}, \frac{3}{8}, \frac{5}{8}, \frac{7}{8} \end{matrix}\right)$$

01.03.26.0104.01

$$e^{-z^{1/n}} = \sqrt{n}\,(2\,\pi)^{\frac{1-n}{2}}\, G_{0,n}^{n,0}\left(\frac{z}{n^n} \,\middle|\, 0, \frac{1}{n}, \frac{2}{n}, \ldots, \frac{n-1}{n}\right) /;\, n \in \mathbb{N}^+$$

01.03.26.0118.01

$$e^{z^{1/n}} = 2^{\frac{n-1}{2}}\,\sqrt{n}\,\pi^{\frac{n+1}{2}}\, G_{n,2n}^{n,0}\left(\frac{z}{n^n} \,\middle|\, \begin{matrix} \frac{1}{2n}, \frac{3}{2n}, \frac{5}{2n}, \ldots, \frac{2n-1}{2n} \\ 0, \frac{1}{n}, \frac{2}{n}, \ldots, \frac{n-1}{n}, \frac{1}{2n}, \frac{3}{2n}, \frac{5}{2n}, \ldots, \frac{2n-1}{2n} \end{matrix}\right) /;\, n \in \mathbb{N}^+$$

Classical cases for the direct function itself minus parts of its series expansion

01.03.26.0005.01

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

01.03.26.0006.01

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

Classical cases involving sin

01.03.26.0105.01

$$e^{-\frac{\sqrt[3]{z}}{\sqrt{3}}} \sin\left(\sqrt[3]{z}\right) = \frac{1}{2} \sqrt{3}\, G_{0,3}^{2,0}\left(\frac{8 z}{81 \sqrt{3}} \,\middle|\, \frac{1}{3}, \frac{2}{3}, 0\right)$$

01.03.26.0119.01

$$e^{-\sqrt[4]{z}} \sin\left(\sqrt[4]{z}\right) = \frac{1}{\sqrt{2 \pi}} G_{0,4}^{3,0}\left(\frac{z}{64} \,\middle|\, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 0\right)$$

01.03.26.0106.01

$$e^{-\sqrt{3} \sqrt[6]{z}} \sin\left(\sqrt[6]{z}\right) = \frac{\sqrt{3}}{4 \pi^{3/2}} G_{0,6}^{5,0}\left(\frac{z}{729} \,\middle|\, \frac{1}{6}, \frac{1}{3}, \frac{1}{2}, \frac{2}{3}, \frac{5}{6}, 0\right)$$

Classical cases involving cos

01.03.26.0107.01

$$e^{-\frac{\sqrt[3]{z}}{\sqrt{3}}} \cos\left(\sqrt[3]{z}\right) = \frac{1}{2} \sqrt{3}\, G_{1,4}^{3,0}\left(\frac{8 z}{81 \sqrt{3}} \,\middle|\, \begin{matrix} \frac{1}{2} \\ 0, \frac{1}{3}, \frac{2}{3}, \frac{1}{2} \end{matrix}\right)$$

01.03.26.0120.01

$$e^{-\sqrt[4]{z}} \cos\left(\sqrt[4]{z}\right) = \frac{1}{\sqrt{2 \pi}} G_{0,4}^{3,0}\left(\frac{z}{64} \,\middle|\, 0, \frac{1}{4}, \frac{3}{4}, \frac{1}{2}\right)$$

01.03.26.0108.01

$$e^{-\sqrt{3} \sqrt[6]{z}} \cos\left(\sqrt[6]{z}\right) = \frac{\sqrt{3}}{4 \pi^{3/2}} G_{0,6}^{5,0}\left(\frac{z}{729} \,\middle|\, 0, \frac{1}{6}, \frac{1}{3}, \frac{2}{3}, \frac{5}{6}, \frac{1}{2}\right)$$

Classical cases involving sinh

01.03.26.0109.01

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

01.03.26.0110.01

$$e^{z} \sinh(z) = -\frac{\pi}{2} G_{2,3}^{1,1}\left(2 z \,\middle|\, \begin{matrix} 1, \frac{1}{2} \\ 1, 0, \frac{1}{2} \end{matrix}\right)$$

Classical cases involving cosh

01.03.26.0009.01

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

01.03.26.0111.01

$$e^z \cosh(z) = \pi\, G_{1,2}^{1,0}\!\left(2z \,\middle|\, \begin{matrix} \frac{1}{2} \\ 0, \frac{1}{2} \end{matrix}\right) + \frac{1}{2}\pi\, G_{2,3}^{1,1}\!\left(2z \,\middle|\, \begin{matrix} 1, \frac{1}{2} \\ 1, 0, \frac{1}{2} \end{matrix}\right)$$

Classical cases involving erf

01.03.26.0121.01

$$e^{z^2} \operatorname{erf}(z) = -\pi\, G_{2,3}^{1,1}\!\left(z^2 \,\middle|\, \begin{matrix} \frac{1}{2}, 0 \\ \frac{1}{2}, 0, 0 \end{matrix}\right) /; -\frac{\pi}{2} < \arg(z) \le \frac{\pi}{2}$$

01.03.26.0122.01

$$e^z \operatorname{erf}\left(\sqrt{z}\right) = -\pi\, G_{2,3}^{1,1}\!\left(z \,\middle|\, \begin{matrix} \frac{1}{2}, 0 \\ \frac{1}{2}, 0, 0 \end{matrix}\right)$$

Classical cases involving erfc

01.03.26.0123.01

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

01.03.26.0010.01

$$e^z \operatorname{erfc}\left(\sqrt{z}\right) = \frac{1}{\pi} G_{1,2}^{2,1}\!\left(z \,\middle|\, \begin{matrix} \frac{1}{2} \\ 0, \frac{1}{2} \end{matrix}\right)$$

Classical cases involving erfi

01.03.26.0124.01

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

01.03.26.0011.01

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

Classical cases involving Ei

01.03.26.0012.01

$$e^{-z} \operatorname{Ei}(z) = -\frac{1}{2} e^{-z} \left(\log\left(\frac{1}{z}\right) + 2\log(-z) - \log(z)\right) - G_{1,2}^{2,1}\!\left(-z \,\middle|\, \begin{matrix} 0 \\ 0, 0 \end{matrix}\right)$$

01.03.26.0125.01

$$e^{-z} \operatorname{Ei}(z) = -\frac{1}{2} e^{-z} \left(\log\left(\frac{1}{z}\right) + \log(z)\right) - \pi\, G_{2,3}^{2,1}\!\left(z \,\middle|\, \begin{matrix} 0, \frac{1}{2} \\ 0, 0, \frac{1}{2} \end{matrix}\right)$$

01.03.26.0013.01

$$e^{-z} \operatorname{Ei}(z) = -\pi\, G_{2,3}^{2,1}\!\left(z \,\middle|\, \begin{matrix} 0, \frac{1}{2} \\ 0, 0, \frac{1}{2} \end{matrix}\right) /; z \notin (-\infty, 0)$$

Classical cases involving exponential integral *E*

01.03.26.0014.01

$$e^z E_\nu(z) = \frac{1}{\Gamma(\nu)} G_{1,2}^{2,1}\left(z \middle| \begin{array}{c} 0 \\ 0, \nu-1 \end{array}\right)$$

Classical cases involving incomplete gamma functions ||| Classical cases involving incomplete gamma functions

01.03.26.0015.01

$$e^z \Gamma(a, z) = \frac{1}{\Gamma(1-a)} G_{1,2}^{2,1}\left(z \middle| \begin{array}{c} a \\ 0, a \end{array}\right)$$

01.03.26.0016.01

$$e^{-z} \Gamma(a, -z) + e^z \Gamma(a, z) = \frac{1}{\sqrt{\pi}\, \Gamma(1-a)} G_{2,4}^{3,2}\left(-\frac{z^2}{4} \middle| \begin{array}{c} \frac{a}{2}, \frac{a+1}{2} \\ \frac{a}{2}, \frac{a+1}{2}, 0, \frac{1}{2} \end{array}\right)$$

01.03.26.0017.01

$$e^{-z} \Gamma(a, -z) - e^z \Gamma(a, z) = -\frac{\sqrt{-z^2}}{\sqrt{\pi}\, \Gamma(1-a)\, z} G_{2,4}^{3,2}\left(-\frac{z^2}{4} \middle| \begin{array}{c} \frac{a}{2}, \frac{a+1}{2} \\ \frac{a}{2}, \frac{a+1}{2}, \frac{1}{2}, 0 \end{array}\right)$$

01.03.26.0018.01

$$e^{\frac{\pi i a}{2} - z} \Gamma(a, -z) + e^{-\frac{\pi i a}{2} + z} \Gamma(a, z) = \frac{1}{\sqrt{\pi}\, \Gamma(1-a)} G_{1,3}^{3,1}\left(-\frac{z^2}{4} \middle| \begin{array}{c} \frac{a}{2} \\ 0, \frac{1}{2}, \frac{a}{2} \end{array}\right) /; 0 < \arg(z) \leq \pi$$

01.03.26.0019.01

$$e^{\frac{\pi i a}{2} - z} \Gamma(a, -z) - e^{-\frac{\pi i a}{2} + z} \Gamma(a, z) = \frac{i}{\sqrt{\pi}\, \Gamma(1-a)} G_{1,3}^{3,1}\left(-\frac{z^2}{4} \middle| \begin{array}{c} \frac{a+1}{2} \\ 0, \frac{1}{2}, \frac{a+1}{2} \end{array}\right) /; 0 < \arg(z) \leq \pi$$

01.03.26.0020.01

$$e^z \Gamma(a, 0, z) = -\pi \csc(\pi a)\, \Gamma(a)\, G_{2,3}^{1,1}\left(z \middle| \begin{array}{c} a, 0 \\ a, 0, 0 \end{array}\right)$$

01.03.26.0021.01

$$e^z \Gamma(a, 0, z) = z^a\, \Gamma(a)\, G_{1,2}^{1,1}\left(-z \middle| \begin{array}{c} 0 \\ 0, -a \end{array}\right)$$

Classical cases involving regularized incomplete gamma functions Q

01.03.26.0022.01

$$e^z Q(a, z) = \frac{\sin(\pi a)}{\pi} G_{1,2}^{2,1}\left(z \middle| \begin{array}{c} a \\ 0, a \end{array}\right)$$

01.03.26.0023.01

$$e^{-z} Q(a, -z) + e^z Q(a, z) = \frac{\sin(\pi a)}{\pi^{3/2}} G_{2,4}^{3,2}\left(-\frac{z^2}{4} \middle| \begin{array}{c} \frac{a+1}{2}, \frac{a}{2} \\ \frac{a+1}{2}, \frac{a}{2}, 0, \frac{1}{2} \end{array}\right)$$

01.03.26.0024.01

$$e^{-z} Q(a, -z) - e^z Q(a, z) = -\frac{\sin(\pi a)\sqrt{-z^2}}{\pi^{3/2}\, z} G_{2,4}^{3,2}\left(-\frac{z^2}{4} \middle| \begin{array}{c} \frac{a+1}{2}, \frac{a}{2} \\ \frac{a+1}{2}, \frac{a}{2}, \frac{1}{2}, 0 \end{array}\right)$$

01.03.26.0025.01

$$e^{\frac{\pi i a}{2}-z} Q(a, -z) + e^{-\frac{\pi i a}{2}+z} Q(a, z) = \frac{\sin(\pi a)}{\pi^{3/2}} G_{1,3}^{3,1}\left(-\frac{z^2}{4} \middle| \begin{matrix} \frac{a}{2} \\ 0, \frac{1}{2}, \frac{a}{2} \end{matrix}\right) /; 0 < \arg(z) \leq \pi$$

01.03.26.0026.01

$$e^{\frac{\pi i a}{2}-z} Q(a, -z) - e^{-\frac{\pi i a}{2}+z} Q(a, z) = \frac{i \sin(\pi a)}{\pi^{3/2}} G_{1,3}^{3,1}\left(-\frac{z^2}{4} \middle| \begin{matrix} \frac{a+1}{2} \\ 0, \frac{1}{2}, \frac{a+1}{2} \end{matrix}\right) /; 0 < \arg(z) \leq \pi$$

01.03.26.0027.01

$$e^z Q(a, 0, z) = -\pi \csc(\pi a) G_{2,3}^{1,1}\left(z \middle| \begin{matrix} a, 0 \\ a, 0, 0 \end{matrix}\right)$$

01.03.26.0028.01

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

Classical cases involving Ai

01.03.26.0029.01

$$e^{-z} \operatorname{Ai}\left(\left(\frac{3}{2}\right)^{2/3} z^{2/3}\right) = \frac{1}{2^{2/3} \sqrt[6]{3} \sqrt{\pi}} G_{1,2}^{2,0}\left(2 z \middle| \begin{matrix} \frac{5}{6} \\ 0, \frac{2}{3} \end{matrix}\right)$$

01.03.26.0030.01

$$e^{z} \operatorname{Ai}\left(\left(\frac{3}{2}\right)^{2/3} z^{2/3}\right) = \frac{1}{2\, 2^{2/3} \sqrt[6]{3}\, \pi^{3/2}} G_{1,2}^{2,1}\left(2 z \middle| \begin{matrix} \frac{5}{6} \\ 0, \frac{2}{3} \end{matrix}\right)$$

01.03.26.0126.01

$$e^{-\frac{1}{3}\left(2 z^{3/2}\right)} \operatorname{Ai}(z) = \frac{1}{2^{2/3} \sqrt[6]{3} \sqrt{\pi}} G_{1,2}^{2,0}\left(\frac{4 z^{3/2}}{3} \middle| \begin{matrix} \frac{5}{6} \\ 0, \frac{2}{3} \end{matrix}\right) /; -\frac{2\pi}{3} < \arg(z) \leq \frac{2\pi}{3}$$

01.03.26.0127.01

$$e^{\frac{2 z^{3/2}}{3}} \operatorname{Ai}(z) = \frac{1}{2\, 2^{2/3} \sqrt[6]{3}\, \pi^{3/2}} G_{1,2}^{2,1}\left(\frac{4 z^{3/2}}{3} \middle| \begin{matrix} \frac{5}{6} \\ 0, \frac{2}{3} \end{matrix}\right) /; -\frac{2\pi}{3} < \arg(z) \leq \frac{2\pi}{3}$$

Classical cases involving Ai′

01.03.26.0031.01

$$e^{-z} \operatorname{Ai}'\left(\left(\frac{3}{2}\right)^{2/3} z^{2/3}\right) = -\frac{\sqrt[6]{3}}{2 \sqrt[3]{2} \sqrt{\pi}} G_{1,2}^{2,0}\left(2 z \middle| \begin{matrix} \frac{7}{6} \\ 0, \frac{4}{3} \end{matrix}\right)$$

01.03.26.0032.01

$$e^{z} \operatorname{Ai}'\left(\left(\frac{3}{2}\right)^{2/3} z^{2/3}\right) = \frac{\sqrt[6]{3}}{4 \sqrt[3]{2}\, \pi^{3/2}} G_{1,2}^{2,1}\left(2 z \middle| \begin{matrix} \frac{7}{6} \\ 0, \frac{4}{3} \end{matrix}\right)$$

01.03.26.0128.01

$$e^{-\frac{1}{3}\left(2 z^{3/2}\right)} \operatorname{Ai}'(z) = -\frac{\sqrt[6]{3}}{2 \sqrt[3]{2} \sqrt{\pi}} G_{1,2}^{2,0}\left(\frac{4 z^{3/2}}{3} \middle| \begin{matrix} \frac{7}{6} \\ 0, \frac{4}{3} \end{matrix}\right) /; -\frac{2\pi}{3} < \arg(z) \leq \frac{2\pi}{3}$$

01.03.26.0129.01

$$e^{\frac{2z^{3/2}}{3}}\,\mathrm{Ai}'(z) = \frac{\sqrt[6]{3}}{4\sqrt[3]{2}\,\pi^{3/2}}\,G_{1,2}^{2,1}\!\left(\frac{4z^{3/2}}{3}\,\middle|\,\begin{matrix}\frac{7}{6}\\ 0,\frac{4}{3}\end{matrix}\right)/;\,-\frac{2\pi}{3} < \arg(z) \le \frac{2\pi}{3}$$

Classical cases involving Bi

01.03.26.0033.01

$$e^{-z}\,\mathrm{Bi}\!\left(\left(\frac{3}{2}\right)^{2/3} z^{2/3}\right) = \frac{1}{2^{2/3}\sqrt[6]{3}\,\sqrt{\pi}}\,G_{2,3}^{2,1}\!\left(2z\,\middle|\,\begin{matrix}\frac{5}{6},\frac{1}{3}\\ 0,\frac{2}{3},\frac{1}{3}\end{matrix}\right)$$

01.03.26.0034.01

$$e^{z}\,\mathrm{Bi}\!\left(\left(\frac{3}{2}\right)^{2/3} z^{2/3}\right) = \frac{\sqrt[3]{2}\,\sqrt{\pi}}{\sqrt[6]{3}}\,G_{2,3}^{2,0}\!\left(2z\,\middle|\,\begin{matrix}\frac{1}{3},\frac{5}{6}\\ 0,\frac{2}{3},\frac{1}{3}\end{matrix}\right)$$

01.03.26.0130.01

$$e^{-\frac{1}{3}\left(2z^{3/2}\right)}\,\mathrm{Bi}(z) = \frac{1}{2^{2/3}\sqrt[6]{3}\,\sqrt{\pi}}\,G_{2,3}^{2,1}\!\left(\frac{4z^{3/2}}{3}\,\middle|\,\begin{matrix}\frac{5}{6},\frac{1}{3}\\ 0,\frac{2}{3},\frac{1}{3}\end{matrix}\right)/;\,-\frac{2\pi}{3} < \arg(z) \le \frac{2\pi}{3}$$

01.03.26.0131.01

$$e^{\frac{2z^{3/2}}{3}}\,\mathrm{Bi}(z) = \frac{\sqrt[3]{2}\,\sqrt{\pi}}{\sqrt[6]{3}}\,G_{2,3}^{2,0}\!\left(\frac{4z^{3/2}}{3}\,\middle|\,\begin{matrix}\frac{1}{3},\frac{5}{6}\\ 0,\frac{2}{3},\frac{1}{3}\end{matrix}\right)/;\,-\frac{2\pi}{3} < \arg(z) \le \frac{2\pi}{3}$$

Classical cases involving Bi′

01.03.26.0035.01

$$e^{-z}\,\mathrm{Bi}'\!\left(\left(\frac{3}{2}\right)^{2/3} z^{2/3}\right) = \frac{\sqrt[6]{3}}{2\sqrt[3]{2}\,\sqrt{\pi}}\,G_{2,3}^{2,1}\!\left(2z\,\middle|\,\begin{matrix}\frac{7}{6},-\frac{1}{3}\\ 0,\frac{4}{3},-\frac{1}{3}\end{matrix}\right)$$

01.03.26.0036.01

$$e^{z}\,\mathrm{Bi}'\!\left(\left(\frac{3}{2}\right)^{2/3} z^{2/3}\right) = -\frac{\sqrt[6]{3}\,\sqrt{\pi}}{\sqrt[3]{2}}\,G_{2,3}^{2,0}\!\left(2z\,\middle|\,\begin{matrix}-\frac{1}{3},\frac{7}{6}\\ 0,\frac{4}{3},-\frac{1}{3}\end{matrix}\right)$$

01.03.26.0132.01

$$e^{-\frac{1}{3}\left(2z^{3/2}\right)}\,\mathrm{Bi}'(z) = \frac{\sqrt[6]{3}}{2\sqrt[3]{2}\,\sqrt{\pi}}\,G_{2,3}^{2,1}\!\left(\frac{4z^{3/2}}{3}\,\middle|\,\begin{matrix}\frac{7}{6},-\frac{1}{3}\\ 0,\frac{4}{3},-\frac{1}{3}\end{matrix}\right)/;\,-\frac{2\pi}{3} < \arg(z) \le \frac{2\pi}{3}$$

01.03.26.0133.01

$$e^{\frac{2z^{3/2}}{3}}\,\mathrm{Bi}'(z) = -\frac{\sqrt[6]{3}\,\sqrt{\pi}}{\sqrt[3]{2}}\,G_{2,3}^{2,0}\!\left(\frac{4z^{3/2}}{3}\,\middle|\,\begin{matrix}-\frac{1}{3},\frac{7}{6}\\ 0,\frac{4}{3},-\frac{1}{3}\end{matrix}\right)/;\,-\frac{2\pi}{3} < \arg(z) \le \frac{2\pi}{3}$$

Classical cases involving Bessel *I*

01.03.26.0037.01

$$e^{-z}\,I_\nu(z) = \frac{1}{\sqrt{\pi}}\,G_{1,2}^{1,1}\!\left(2z\,\middle|\,\begin{matrix}\frac{1}{2}\\ \nu,-\nu\end{matrix}\right)$$

01.03.26.0038.01

$$e^z I_\nu(z) = -\sqrt{\pi}\, \csc(\pi\nu)\, G_{2,3}^{1,1}\!\left(2z \,\middle|\, \begin{matrix} \frac{1}{2}, 0 \\ \nu, -\nu, 0 \end{matrix}\right)$$

Classical cases involving Bessel *K*

01.03.26.0039.01

$$e^{-z} K_\nu(z) = \sqrt{\pi}\; G_{1,2}^{2,0}\!\left(2z \,\middle|\, \begin{matrix} \frac{1}{2} \\ -\nu, \nu \end{matrix}\right)$$

01.03.26.0040.01

$$e^z K_\nu(z) = \frac{\cos(\pi\nu)}{\sqrt{\pi}}\, G_{1,2}^{2,1}\!\left(2z \,\middle|\, \begin{matrix} \frac{1}{2} \\ -\nu, \nu \end{matrix}\right)$$

Classical cases involving parabolic cylinder function *D*

01.03.26.0134.01

$$e^z D_\nu\!\left(2\sqrt{z}\right) = \frac{2^{-\frac{\nu}{2}-1}}{\sqrt{\pi}\,\Gamma(-\nu)}\, G_{1,2}^{2,1}\!\left(2z \,\middle|\, \begin{matrix} \frac{\nu}{2}+1 \\ 0, \frac{1}{2} \end{matrix}\right)$$

01.03.26.0135.01

$$e^z D_\nu\!\left(-2\sqrt{z}\right) = \frac{2^{\frac{1-\nu}{2}}\pi^{3/2}}{\Gamma(-\nu)}\, G_{3,4}^{2,1}\!\left(2z \,\middle|\, \begin{matrix} \frac{\nu}{2}+1, \frac{1}{8}, \frac{5}{8} \\ 0, \frac{1}{2}, \frac{1}{8}, \frac{5}{8} \end{matrix}\right)$$

01.03.26.0136.01

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

01.03.26.0137.01

$$e^{-z} D_\nu\!\left(-2\sqrt{z}\right) = 2^{\nu/2}\, G_{2,3}^{2,1}\!\left(2z \,\middle|\, \begin{matrix} \frac{1-\nu}{2}, \frac{\nu+1}{2} \\ 0, \frac{1}{2}, \frac{\nu+1}{2} \end{matrix}\right)$$

01.03.26.0138.01

$$e^z \left(D_\nu\!\left(2\sqrt{z}\right) + D_\nu\!\left(-2\sqrt{z}\right)\right) = \frac{2^{\frac{1-\nu}{2}}\pi^{3/2}}{\Gamma(-\nu)}\, G_{2,3}^{1,1}\!\left(2z \,\middle|\, \begin{matrix} \frac{\nu}{2}+1, \frac{1}{4} \\ 0, \frac{1}{2}, \frac{1}{4} \end{matrix}\right)$$

01.03.26.0139.01

$$e^z \left(D_\nu\!\left(2\sqrt{z}\right) - D_\nu\!\left(-2\sqrt{z}\right)\right) = \frac{2^{\frac{1-\nu}{2}}\pi^{3/2}}{\Gamma(-\nu)}\, G_{2,3}^{1,1}\!\left(2z \,\middle|\, \begin{matrix} \frac{\nu}{2}+1, \frac{1}{4} \\ \frac{1}{2}, 0, \frac{1}{4} \end{matrix}\right)$$

01.03.26.0140.01

$$e^{-z} \left(D_\nu\!\left(2\sqrt{z}\right) + D_\nu\!\left(-2\sqrt{z}\right)\right) = 2^{\frac{\nu}{2}+1}\cos\!\left(\frac{\pi\nu}{2}\right) G_{1,2}^{1,1}\!\left(2z \,\middle|\, \begin{matrix} \frac{1-\nu}{2} \\ 0, \frac{1}{2} \end{matrix}\right)$$

01.03.26.0141.01

$$e^{-z} \left(D_\nu\!\left(2\sqrt{z}\right) - D_\nu\!\left(-2\sqrt{z}\right)\right) = 2^{\frac{\nu}{2}+1}\sin\!\left(\frac{\pi\nu}{2}\right) G_{1,2}^{1,1}\!\left(2z \,\middle|\, \begin{matrix} \frac{1-\nu}{2} \\ \frac{1}{2}, 0 \end{matrix}\right)$$

01.03.26.0142.01

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

01.03.26.0143.01

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

Classical cases involving Hermite H

01.03.26.0041.01

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

01.03.26.0144.01

$$e^{-z} H_\nu\left(-\sqrt{z}\right) = 2^\nu G_{2,3}^{2,1}\left(z \,\middle|\, \begin{matrix} \frac{1-\nu}{2}, \frac{\nu+1}{2} \\ 0, \frac{1}{2}, \frac{\nu+1}{2} \end{matrix}\right)$$

01.03.26.0145.01

$$e^{-z}\left(H_\nu\left(-\sqrt{z}\right) + H_\nu\left(\sqrt{z}\right)\right) = 2^{\nu+1}\cos\left(\frac{\pi\nu}{2}\right) G_{1,2}^{1,1}\left(z \,\middle|\, \begin{matrix} \frac{1-\nu}{2} \\ 0, \frac{1}{2} \end{matrix}\right)$$

01.03.26.0146.01

$$e^{-z}\left(H_\nu\left(\sqrt{z}\right) - H_\nu\left(-\sqrt{z}\right)\right) = 2^{\nu+1}\sin\left(\frac{\pi\nu}{2}\right) G_{1,2}^{1,1}\left(z \,\middle|\, \begin{matrix} \frac{1-\nu}{2} \\ \frac{1}{2}, 0 \end{matrix}\right)$$

01.03.26.0147.01

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

Classical cases involving cosh and Hermite H

01.03.26.0148.01

$$e^{-z}\cosh(z) H_\nu\left(\sqrt{2z}\right) = 2^{\nu-1} G_{1,2}^{2,0}\left(z \,\middle|\, \begin{matrix} \frac{1-\nu}{2} \\ 0, \frac{1}{2} \end{matrix}\right) + \frac{1}{4\sqrt{\pi}\,\Gamma(-\nu)} G_{1,2}^{2,1}\left(z \,\middle|\, \begin{matrix} \frac{\nu}{2}+1 \\ 0, \frac{1}{2} \end{matrix}\right)$$

01.03.26.0149.01

$$e^{-z}\cosh(z) H_\nu\left(-\sqrt{2z}\right) = 2^{\nu-1} G_{2,3}^{2,1}\left(2z \,\middle|\, \begin{matrix} \frac{1-\nu}{2}, \frac{\nu+1}{2} \\ 0, \frac{1}{2}, \frac{\nu+1}{2} \end{matrix}\right) + \frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)} G_{3,4}^{2,1}\left(2z \,\middle|\, \begin{matrix} \frac{\nu}{2}+1, \frac{1}{8}, \frac{5}{8} \\ 0, \frac{1}{2}, \frac{1}{8}, \frac{5}{8} \end{matrix}\right)$$

01.03.26.0150.01

$$e^{-z}\cosh(z)\left(H_\nu\left(-\sqrt{2z}\right) + H_\nu\left(\sqrt{2z}\right)\right) = 2^\nu\cos\left(\frac{\pi\nu}{2}\right) G_{1,2}^{1,1}\left(2z \,\middle|\, \begin{matrix} \frac{1-\nu}{2} \\ 0, \frac{1}{2} \end{matrix}\right) + \frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)} G_{2,3}^{1,1}\left(2z \,\middle|\, \begin{matrix} \frac{\nu}{2}+1, \frac{1}{4} \\ 0, \frac{1}{2}, \frac{1}{4} \end{matrix}\right)$$

01.03.26.0151.01

$$e^{-z}\cosh(z)\left(H_\nu\left(\sqrt{2z}\right) - H_\nu\left(-\sqrt{2z}\right)\right) = \frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)} G_{2,3}^{1,1}\left(2z \,\middle|\, \begin{matrix} \frac{\nu}{2}+1, \frac{1}{4} \\ \frac{1}{2}, 0, \frac{1}{4} \end{matrix}\right) + 2^\nu\sin\left(\frac{\pi\nu}{2}\right) G_{1,2}^{1,1}\left(2z \,\middle|\, \begin{matrix} \frac{1-\nu}{2} \\ \frac{1}{2}, 0 \end{matrix}\right)$$

01.03.26.0152.01

$$e^{-z^2}\cosh(z^2)\,H_\nu\left(\sqrt{2}\,z\right)=2^{\nu-1}\,G_{1,2}^{2,0}\left(2\,z^2\,\middle|\,\begin{matrix}\frac{1-\nu}{2}\\0,\frac{1}{2}\end{matrix}\right)+\frac{1}{4\sqrt{\pi}\,\Gamma(-\nu)}\,G_{1,2}^{2,1}\left(2\,z^2\,\middle|\,\begin{matrix}\frac{\nu}{2}+1\\0,\frac{1}{2}\end{matrix}\right)/;\,-\frac{\pi}{2}<\arg(z)\leq\frac{\pi}{2}$$

01.03.26.0153.01

$$e^{-z^2}\cosh(z^2)\,H_\nu\left(-\sqrt{2}\,z\right)=2^{\nu-1}\,G_{2,3}^{2,1}\left(2\,z^2\,\middle|\,\begin{matrix}\frac{1-\nu}{2},\frac{\nu+1}{2}\\0,\frac{1}{2},\frac{\nu+1}{2}\end{matrix}\right)+\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{3,4}^{2,1}\left(2\,z^2\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\frac{1}{8},\frac{5}{8}\\0,\frac{1}{2},\frac{1}{8},\frac{5}{8}\end{matrix}\right)/;\,-\frac{\pi}{2}<\arg(z)\leq\frac{\pi}{2}$$

01.03.26.0154.01

$$e^{-z^2}\cosh(z^2)\,\left(H_\nu\left(-\sqrt{2}\,z\right)+H_\nu\left(\sqrt{2}\,z\right)\right)=2^\nu\cos\left(\frac{\pi\,\nu}{2}\right)G_{1,2}^{1,1}\left(2\,z^2\,\middle|\,\begin{matrix}\frac{1-\nu}{2}\\0,\frac{1}{2}\end{matrix}\right)+\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{2,3}^{1,1}\left(z^2\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\frac{1}{4}\\0,\frac{1}{2},\frac{1}{4}\end{matrix}\right)/;\,-\frac{\pi}{2}<\arg(z)\leq\frac{\pi}{2}$$

01.03.26.0155.01

$$e^{-z^2}\cosh(z^2)\left(H_\nu\left(\sqrt{2}\,z\right)-H_\nu\left(-\sqrt{2}\,z\right)\right)=\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{2,3}^{1,1}\left(z^2\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\frac{1}{4}\\\frac{1}{2},0,\frac{1}{4}\end{matrix}\right)+2^\nu\,G_{1,2}^{1,1}\left(2\,z^2\,\middle|\,\begin{matrix}\frac{1-\nu}{2}\\\frac{1}{2},0\end{matrix}\right)\sin\left(\frac{\pi\,\nu}{2}\right)/;\,-\frac{\pi}{2}<\arg(z)\leq\frac{\pi}{2}$$

Classical cases involving sinh and Hermite *H*

01.03.26.0156.01

$$e^{-z}\sinh(z)\,H_\nu\left(\sqrt{2\,z}\right)=\frac{1}{4\sqrt{\pi}\,\Gamma(-\nu)}\,G_{1,2}^{2,1}\left(z\,\middle|\,\begin{matrix}\frac{\nu}{2}+1\\0,\frac{1}{2}\end{matrix}\right)-2^{\nu-1}\,G_{1,2}^{2,0}\left(2\,z\,\middle|\,\begin{matrix}\frac{1-\nu}{2}\\0,\frac{1}{2}\end{matrix}\right)$$

01.03.26.0157.01

$$e^{-z}\sinh(z)\,H_\nu\left(-\sqrt{2\,z}\right)=\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{3,4}^{2,1}\left(2\,z\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\frac{1}{8},\frac{5}{8}\\0,\frac{1}{2},\frac{1}{8},\frac{5}{8}\end{matrix}\right)-2^{\nu-1}\,G_{2,3}^{2,1}\left(2\,z\,\middle|\,\begin{matrix}\frac{1-\nu}{2},\frac{\nu+1}{2}\\0,\frac{1}{2},\frac{\nu+1}{2}\end{matrix}\right)$$

01.03.26.0158.01

$$e^{-z}\sinh(z)\left(H_\nu\left(-\sqrt{2\,z}\right)+H_\nu\left(\sqrt{2\,z}\right)\right)=\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{2,3}^{1,1}\left(2\,z\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\frac{1}{4}\\0,\frac{1}{2},\frac{1}{4}\end{matrix}\right)-2^\nu\cos\left(\frac{\pi\,\nu}{2}\right)G_{1,2}^{1,1}\left(2\,z\,\middle|\,\begin{matrix}\frac{1-\nu}{2}\\0,\frac{1}{2}\end{matrix}\right)$$

01.03.26.0159.01

$$e^{-z}\sinh(z)\left(H_\nu\left(\sqrt{2\,z}\right)-H_\nu\left(-\sqrt{2\,z}\right)\right)=\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{2,3}^{1,1}\left(2\,z\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\frac{1}{4}\\\frac{1}{2},0,\frac{1}{4}\end{matrix}\right)-2^\nu\sin\left(\frac{\pi\,\nu}{2}\right)G_{1,2}^{1,1}\left(2\,z\,\middle|\,\begin{matrix}\frac{1-\nu}{2}\\\frac{1}{2},0\end{matrix}\right)$$

01.03.26.0160.01

$$e^{-z^2}\sinh(z^2)\,H_\nu\left(\sqrt{2}\,z\right)=\frac{1}{4\sqrt{\pi}\,\Gamma(-\nu)}\,G_{1,2}^{2,1}\left(2\,z^2\,\middle|\,\begin{matrix}\frac{\nu}{2}+1\\0,\frac{1}{2}\end{matrix}\right)-2^{\nu-1}\,G_{1,2}^{2,0}\left(2\,z^2\,\middle|\,\begin{matrix}\frac{1-\nu}{2}\\0,\frac{1}{2}\end{matrix}\right)/;\,-\frac{\pi}{2}<\arg(z)\leq\frac{\pi}{2}$$

01.03.26.0161.01

$$e^{-z^2}\sinh(z^2)\,H_\nu\left(-\sqrt{2}\,z\right)=\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{3,4}^{2,1}\left(2\,z^2\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\frac{1}{8},\frac{5}{8}\\0,\frac{1}{2},\frac{1}{8},\frac{5}{8}\end{matrix}\right)-2^{\nu-1}\,G_{2,3}^{2,1}\left(2\,z^2\,\middle|\,\begin{matrix}\frac{1-\nu}{2},\frac{\nu+1}{2}\\0,\frac{1}{2},\frac{\nu+1}{2}\end{matrix}\right)/;\,-\frac{\pi}{2}<\arg(z)\leq\frac{\pi}{2}$$

01.03.26.0162.01

$$e^{-z^2}\sinh(z^2)\left(H_\nu\left(-\sqrt{2}\,z\right)+H_\nu\left(\sqrt{2}\,z\right)\right)=\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{2,3}^{1,1}\left(2\,z^2\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\frac{1}{4}\\0,\frac{1}{2},\frac{1}{4}\end{matrix}\right)-2^\nu\cos\left(\frac{\pi\,\nu}{2}\right)G_{1,2}^{1,1}\left(2\,z^2\,\middle|\,\begin{matrix}\frac{1-\nu}{2}\\0,\frac{1}{2}\end{matrix}\right)/;\,-\frac{\pi}{2}<\arg(z)\leq\frac{\pi}{2}$$

01.03.26.0163.01

$$e^{-z^2}\sinh(z^2)\left(H_\nu\left(\sqrt{2}\,z\right)-H_\nu\left(-\sqrt{2}\,z\right)\right)=\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{2,3}^{1,1}\left(2\,z^2\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\ \frac{1}{4}\\ \frac{1}{2},\ 0,\ \frac{1}{4}\end{matrix}\right)-2^\nu\sin\left(\frac{\pi\,\nu}{2}\right)G_{1,2}^{1,1}\left(2\,z^2\,\middle|\,\begin{matrix}\frac{1-\nu}{2}\\ \frac{1}{2},\ 0\end{matrix}\right)\ /;\ -\frac{\pi}{2}<\arg(z)\leq\frac{\pi}{2}$$

Classical cases involving products of Hermite H

01.03.26.0164.01

$$e^{-\sqrt{z}}\,H_{-\nu-1}\left(\sqrt[4]{z}\right)H_\nu\left(\sqrt[4]{z}\right)=\frac{1}{2^{3/2}\sqrt{\pi}}\,G_{2,4}^{4,0}\left(\frac{z}{4}\,\middle|\,\begin{matrix}\frac{1-\nu}{2},\ \frac{\nu}{2}+1\\ 0,\ \frac{1}{4},\ \frac{1}{2},\ \frac{3}{4}\end{matrix}\right)$$

Classical cases involving parabolic cylinder D and Hermite H

01.03.26.0165.01

$$e^{-z^2}\,D_\nu(i\,2\,z)\,H_\nu\left(\sqrt{2}\,z\right)=\frac{2^{\frac{\nu-3}{2}}}{\pi\,\Gamma(-\nu)}\,G_{2,4}^{4,1}\left(-z^4\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\ \frac{1-\nu}{2}\\ 0,\ \frac{1}{4},\ \frac{1}{2},\ \frac{3}{4}\end{matrix}\right)\ /;\ -\frac{\pi}{2}\leq\arg(z)\leq 0$$

01.03.26.0166.01

$$e^{-z^2}\,D_{-\nu-1}(2\,z)\,H_\nu\left(\sqrt{2}\,z\right)=\frac{2^{\frac{\nu}{2}-1}}{\sqrt{\pi}}\,G_{2,4}^{4,0}\left(z^4\,\middle|\,\begin{matrix}\frac{1-\nu}{2},\ \frac{\nu}{2}+1\\ 0,\ \frac{1}{4},\ \frac{1}{2},\ \frac{3}{4}\end{matrix}\right)\ /;\ -\frac{\pi}{4}\leq\arg(z)\leq\frac{\pi}{4}$$

Classical cases involving Laguerre L

01.03.26.0042.01

$$e^{-z}\,L_\nu\,(z)=\frac{1}{\Gamma\,(\nu+1)}\,G_{1,2}^{1,1}\left(z\,\middle|\,\begin{matrix}-\nu\\ 0,\ 0\end{matrix}\right)$$

01.03.26.0043.01

$$e^{-z}\,L_\nu^\lambda\,(z)=\frac{1}{\Gamma\,(\nu+1)}\,G_{1,2}^{1,1}\left(z\,\middle|\,\begin{matrix}-\nu-\lambda\\ 0,\ -\lambda\end{matrix}\right)$$

Classical cases involving cosh and Laguerre L

01.03.26.0167.01

$$e^{-z}\cosh(z)\,L_\nu(2\,z)=\frac{1}{2}\,\Gamma(\nu+1)\,G_{1,2}^{1,0}\left(2\,z\,\middle|\,\begin{matrix}\nu+1\\ 0,\ 0\end{matrix}\right)+\frac{1}{2\,\Gamma(\nu+1)}\,G_{1,2}^{1,1}\left(2\,z\,\middle|\,\begin{matrix}-\nu\\ 0,\ 0\end{matrix}\right)$$

01.03.26.0168.01

$$e^{-z}\cosh(z)\,L_\nu^\lambda(2\,z)=\frac{1}{2}\,\Gamma(\lambda+\nu+1)\,G_{1,2}^{1,0}\left(2\,z\,\middle|\,\begin{matrix}\nu+1\\ 0,\ -\lambda\end{matrix}\right)+\frac{1}{2\,\Gamma(\nu+1)}\,G_{1,2}^{1,1}\left(2\,z\,\middle|\,\begin{matrix}-\lambda-\nu\\ 0,\ -\lambda\end{matrix}\right)$$

Classical cases involving sinh and Laguerre L

01.03.26.0169.01

$$e^{-z}\sinh(z)\,L_\nu(2\,z)=\frac{1}{2}\,\Gamma(\nu+1)\,G_{1,2}^{1,0}\left(2\,z\,\middle|\,\begin{matrix}\nu+1\\ 0,\ 0\end{matrix}\right)-\frac{1}{2\,\Gamma(\nu+1)}\,G_{1,2}^{1,1}\left(2\,z\,\middle|\,\begin{matrix}-\nu\\ 0,\ 0\end{matrix}\right)$$

01.03.26.0170.01

$$e^{-z}\sinh(z)\,L_\nu^\lambda(2\,z)=\frac{1}{2}\,\Gamma(\lambda+\nu+1)\,G_{1,2}^{1,0}\left(2\,z\,\middle|\,\begin{matrix}\nu+1\\ 0,\ -\lambda\end{matrix}\right)-\frac{1}{2\,\Gamma(\nu+1)}\,G_{1,2}^{1,1}\left(2\,z\,\middle|\,\begin{matrix}-\lambda-\nu\\ 0,\ -\lambda\end{matrix}\right)$$

Classical cases involving products of Laguerre L

01.03.26.0171.01

$$e^{-z} L_{-\nu-1}(z) L_\nu(z) = -\sqrt{\pi} \sin(\pi \nu) G_{3,5}^{1,2}\left(\frac{z^2}{4} \middle| \begin{matrix} \nu+1, -\lambda-\nu, \frac{1}{2} \\ 0, 0, 0, \frac{1}{2}, \frac{1}{2} \end{matrix}\right)$$

01.03.26.0172.01

$$e^{-z} L_{-\lambda-\nu-1}^{\lambda}(z) L_\nu^{\lambda}(z) = -\frac{2^{-\lambda} \sqrt{\pi} \Gamma(-\nu) \sin(\pi \nu)}{\Gamma(-\lambda-\nu)} G_{3,5}^{1,2}\left(\frac{z^2}{4} \middle| \begin{matrix} \nu+1, -\lambda-\nu, \frac{1}{2} \\ 0, -\frac{\lambda}{2}, \frac{1-\lambda}{2}, -\lambda, \frac{1}{2} \end{matrix}\right)$$

Classical cases involving ${}_0F_1$

01.03.26.0044.01

$$e^{-z} {}_0F_1\left(; b; \frac{z^2}{4}\right) = \frac{4^{b-1} \Gamma(b)}{\sqrt{\pi}} G_{1,2}^{1,1}\left(2 z \middle| \begin{matrix} \frac{3}{2}-b \\ 0, 2-2 b \end{matrix}\right)$$

01.03.26.0045.01

$$e^{z} {}_0F_1\left(; b; \frac{z^2}{4}\right) = 4^{b-1} \sqrt{\pi} \csc(b \pi) \Gamma(b) G_{2,3}^{1,1}\left(2 z \middle| \begin{matrix} \frac{3}{2}-b, 1-b \\ 0, 2-2 b, 1-b \end{matrix}\right)$$

01.03.26.0173.01

$$e^{-2 \sqrt{z}} {}_0F_1(; b; z) = \frac{4^{b-1} \Gamma(b)}{\sqrt{\pi}} G_{1,2}^{1,1}\left(4 \sqrt{z} \middle| \begin{matrix} \frac{3}{2}-b \\ 0, 2-2 b \end{matrix}\right)$$

01.03.26.0174.01

$$e^{2 \sqrt{z}} {}_0F_1(; b; z) = 4^{b-1} \sqrt{\pi} \csc(b \pi) \Gamma(b) G_{2,3}^{1,1}\left(4 \sqrt{z} \middle| \begin{matrix} \frac{3}{2}-b, 1-b \\ 0, 2-2 b, 1-b \end{matrix}\right)$$

Classical cases involving ${}_0\tilde{F}_1$

01.03.26.0046.01

$$e^{-z} {}_0\tilde{F}_1\left(; b; \frac{z^2}{4}\right) = \frac{4^{b-1}}{\sqrt{\pi}} G_{1,2}^{1,1}\left(2 z \middle| \begin{matrix} \frac{3}{2}-b \\ 0, 2-2 b \end{matrix}\right)$$

01.03.26.0047.01

$$e^{z} {}_0\tilde{F}_1\left(; b; \frac{z^2}{4}\right) = 4^{b-1} \sqrt{\pi} \csc(b \pi) G_{2,3}^{1,1}\left(2 z \middle| \begin{matrix} \frac{3}{2}-b, 1-b \\ 0, 2-2 b, 1-b \end{matrix}\right)$$

01.03.26.0175.01

$$e^{-2 \sqrt{z}} {}_0\tilde{F}_1(; b; z) = \frac{4^{b-1}}{\sqrt{\pi}} G_{1,2}^{1,1}\left(4 \sqrt{z} \middle| \begin{matrix} \frac{3}{2}-b \\ 0, 2-2 b \end{matrix}\right)$$

01.03.26.0176.01

$$e^{2 \sqrt{z}} {}_0\tilde{F}_1(; b; z) = 4^{b-1} \sqrt{\pi} \csc(b \pi) G_{2,3}^{1,1}\left(4 \sqrt{z} \middle| \begin{matrix} \frac{3}{2}-b, 1-b \\ 0, 2-2 b, 1-b \end{matrix}\right)$$

Classical cases involving ${}_1F_1$

01.03.26.0048.01

$$e^{-z} {}_1F_1(a; b; z) = \frac{\Gamma(b)}{\Gamma(b-a)} G_{1,2}^{1,1}\left(z \middle| \begin{matrix} a-b+1 \\ 0, 1-b \end{matrix}\right)$$

Classical cases involving cosh and ${}_1F_1$

01.03.26.0177.01

$$e^{-z}\cosh(z)\,{}_1F_1(a;b;2z)=\frac{\pi\,\Gamma(b)}{2\,\Gamma(a)}\,G_{2,3}^{1,1}\!\left(2z\,\middle|\,\begin{array}{c}1-a,\frac{1}{2}\\0,1-b,\frac{1}{2}\end{array}\right)+\frac{\Gamma(b)}{2\,\Gamma(b-a)}\,G_{1,2}^{1,1}\!\left(2z\,\middle|\,\begin{array}{c}a-b+1\\0,1-b\end{array}\right)$$

Classical cases involving sinh and ${}_1F_1$

01.03.26.0178.01

$$e^{-z}\sinh(z)\,{}_1F_1(a;b;2z)=\frac{\pi\,\Gamma(b)}{2\,\Gamma(a)}\,G_{2,3}^{1,1}\!\left(2z\,\middle|\,\begin{array}{c}1-a,\frac{1}{2}\\0,1-b,\frac{1}{2}\end{array}\right)-\frac{\Gamma(b)}{2\,\Gamma(b-a)}\,G_{1,2}^{1,1}\!\left(2z\,\middle|\,\begin{array}{c}a-b+1\\0,1-b\end{array}\right)$$

Classical cases involving products of ${}_1F_1$

01.03.26.0049.01

$$e^{-z}\,{}_1F_1(a;b;z)\,{}_1F_1(b-a;b;z)=\frac{2^{1-b}\sqrt{\pi}\,\Gamma(b)^2}{\Gamma(a)\,\Gamma(b-a)}\,G_{2,4}^{1,2}\!\left(-\frac{z^2}{4}\,\middle|\,\begin{array}{c}1-a,a-b+1\\0,\frac{1-b}{2},1-\frac{b}{2},1-b\end{array}\right)$$

01.03.26.0050.01

$$e^{-z}\,{}_1F_1(a;b;z)\,{}_1F_1(b-a;b;z)=\frac{2^{1-b}\pi^{3/2}\,\Gamma(b)^2}{\Gamma(a)\,\Gamma(b-a)}\,G_{3,5}^{1,2}\!\left(\frac{z^2}{4}\,\middle|\,\begin{array}{c}1-a,a-b+1,\frac{1}{2}\\0,\frac{1-b}{2},1-\frac{b}{2},1-b,\frac{1}{2}\end{array}\right)$$

01.03.26.0051.01

$$e^{-z}\,{}_1F_1(a;2a;z)\,{}_1F_1(c;2c;z)=\frac{2^{a+c-1}}{\sqrt{\pi}}\,\Gamma\!\left(a+\frac{1}{2}\right)\Gamma\!\left(c+\frac{1}{2}\right)G_{2,4}^{1,2}\!\left(-\frac{z^2}{4}\,\middle|\,\begin{array}{c}1-\frac{a+c}{2},\frac{1-a-c}{2}\\0,1-a-c,\frac{1}{2}-c,\frac{1}{2}-a\end{array}\right)$$

01.03.26.0052.01

$$e^{-z}\,{}_1F_1(a;2a;z)\,{}_1F_1(c;2c;z)=2^{a+c-1}\sqrt{\pi}\,\Gamma\!\left(a+\frac{1}{2}\right)\Gamma\!\left(c+\frac{1}{2}\right)G_{3,5}^{1,2}\!\left(\frac{z^2}{4}\,\middle|\,\begin{array}{c}1-\frac{a+c}{2},\frac{1-a-c}{2},\frac{1}{2}\\0,1-a-c,\frac{1}{2}-c,\frac{1}{2}-a,\frac{1}{2}\end{array}\right)$$

Classical cases involving ${}_1\tilde{F}_1$

01.03.26.0179.01

$$e^{-z}\,{}_1\tilde{F}_1(a;b;z)=\frac{1}{\Gamma(b-a)}\,G_{1,2}^{1,1}\!\left(z\,\middle|\,\begin{array}{c}a-b+1\\0,1-b\end{array}\right)$$

Classical cases involving ${}_1F_1$ and ${}_1\tilde{F}_1$

01.03.26.0053.01

$$e^{-z}\,{}_1F_1(a;b;z)\,{}_1\tilde{F}_1(b-a;b;z)=\frac{2^{1-b}\sqrt{\pi}\,\Gamma(b)}{\Gamma(a)\,\Gamma(b-a)}\,G_{2,4}^{1,2}\!\left(-\frac{z^2}{4}\,\middle|\,\begin{array}{c}1-a,a-b+1\\0,\frac{1-b}{2},1-\frac{b}{2},1-b\end{array}\right)$$

01.03.26.0054.01

$$e^{-z}\,{}_1F_1(a;b;z)\,{}_1\tilde{F}_1(b-a;b;z)=\frac{2^{1-b}\pi^{3/2}\,\Gamma(b)}{\Gamma(a)\,\Gamma(b-a)}\,G_{3,5}^{1,2}\!\left(\frac{z^2}{4}\,\middle|\,\begin{array}{c}1-a,a-b+1,\frac{1}{2}\\0,\frac{1-b}{2},1-\frac{b}{2},1-b,\frac{1}{2}\end{array}\right)$$

01.03.26.0055.01

$$e^{-z}\,{}_1F_1(a;2a;z)\,{}_1\tilde{F}_1(c;2c;z)=\frac{2^{a-c}\,\Gamma\!\left(a+\frac{1}{2}\right)}{\Gamma(c)}\,G_{2,4}^{1,2}\!\left(-\frac{z^2}{4}\,\middle|\,\begin{array}{c}1-\frac{a+c}{2},\frac{1-a-c}{2}\\0,1-a-c,\frac{1}{2}-c,\frac{1}{2}-a\end{array}\right)$$

01.03.26.0056.01

$$e^{-z}\,{}_1F_1(a;2a;z)\,{}_1\tilde{F}_1(c;2c;z) = \frac{2^{a-c}\,\pi\,\Gamma\left(a+\frac{1}{2}\right)}{\Gamma(c)}\,G_{3,5}^{1,2}\left(\frac{z^2}{4}\,\middle|\,\begin{array}{c}1-\frac{a+c}{2},\frac{1-a-c}{2},\frac{1}{2}\\0,1-a-c,\frac{1}{2}-c,\frac{1}{2}-a,\frac{1}{2}\end{array}\right)$$

Classical cases involving ${}_1F_1$ and hypergeometric U

01.03.26.0112.01

$$e^{-\sqrt{z}}\,{}_1F_1\left(a;b;\sqrt{z}\right)U\left(b-a,b,\sqrt{z}\right) = \frac{2^{-b}\,\Gamma(b}{\sqrt{\pi}\,\Gamma(b-a)}\,G_{2,4}^{3,1}\left(\frac{z}{4}\,\middle|\,\begin{array}{c}a-b+1,1-a\\\frac{1-b}{2},1-\frac{b}{2},0,1-b\end{array}\right)$$

01.03.26.0057.01

$$e^{-z}\,{}_1F_1(a;b;z)\,U(b-a,b,z) = \frac{2^{-b}\,\Gamma(b)}{\sqrt{\pi}\,\Gamma(b-a)}\,G_{2,4}^{3,1}\left(\frac{z^2}{4}\,\middle|\,\begin{array}{c}a-b+1,1-a\\\frac{1-b}{2},1-\frac{b}{2},0,1-b\end{array}\right)\,/;\,-\frac{\pi}{2}<\arg(z)\leq\frac{\pi}{2}$$

Classical cases involving ${}_1\tilde{F}_1$

01.03.26.0058.01

$$e^{-z}\,{}_1\tilde{F}_1(a;b;z) = \frac{1}{\Gamma(b-a)}\,G_{1,2}^{1,1}\left(z\,\middle|\,\begin{array}{c}a-b+1\\0,1-b\end{array}\right)$$

Classical cases involving cosh and ${}_1\tilde{F}_1$

01.03.26.0180.01

$$e^{-z}\cosh(z)\,{}_1\tilde{F}_1(a;b;2z) = \frac{\pi}{2\,\Gamma(a)}\,G_{2,3}^{1,1}\left(2z\,\middle|\,\begin{array}{c}1-a,\frac{1}{2}\\0,1-b,\frac{1}{2}\end{array}\right)+\frac{1}{2\,\Gamma(b-a)}\,G_{1,2}^{1,1}\left(2z\,\middle|\,\begin{array}{c}a-b+1\\0,1-b\end{array}\right)$$

Classical cases involving sinh and ${}_1\tilde{F}_1$

01.03.26.0181.01

$$e^{-z}\sinh(z)\,{}_1\tilde{F}_1(a;b;2z) = \frac{\pi}{2\,\Gamma(a)}\,G_{2,3}^{1,1}\left(2z\,\middle|\,\begin{array}{c}1-a,\frac{1}{2}\\0,1-b,\frac{1}{2}\end{array}\right)-\frac{1}{2\,\Gamma(b-a)}\,G_{1,2}^{1,1}\left(2z\,\middle|\,\begin{array}{c}a-b+1\\0,1-b\end{array}\right)$$

Classical cases involving products of ${}_1\tilde{F}_1$

01.03.26.0059.01

$$e^{-z}\,{}_1\tilde{F}_1(a;b;z)\,{}_1\tilde{F}_1(b-a;b;z) = \frac{2^{1-b}\sqrt{\pi}}{\Gamma(a)\,\Gamma(b-a)}\,G_{2,4}^{1,2}\left(-\frac{z^2}{4}\,\middle|\,\begin{array}{c}1-a,a-b+1\\0,\frac{1-b}{2},1-\frac{b}{2},1-b\end{array}\right)$$

01.03.26.0060.01

$$e^{-z}\,{}_1\tilde{F}_1(a;b;z)\,{}_1\tilde{F}_1(b-a;b;z) = \frac{2^{1-b}\,\pi^{3/2}}{\Gamma(a)\,\Gamma(b-a)}\,G_{3,5}^{1,2}\left(\frac{z^2}{4}\,\middle|\,\begin{array}{c}1-a,a-b+1,\frac{1}{2}\\0,\frac{1-b}{2},1-\frac{b}{2},1-b,\frac{1}{2}\end{array}\right)$$

01.03.26.0061.01

$$e^{-z}\,{}_1\tilde{F}_1(a;2a;z)\,{}_1\tilde{F}_1(c;2c;z) = \frac{2^{1-a-c}\sqrt{\pi}}{\Gamma(a)\,\Gamma(c)}\,G_{2,4}^{1,2}\left(-\frac{z^2}{4}\,\middle|\,\begin{array}{c}1-\frac{a+c}{2},\frac{1-a-c}{2}\\0,1-a-c,\frac{1}{2}-c,\frac{1}{2}-a\end{array}\right)$$

01.03.26.0062.01

$$e^{-z}\,{}_1\tilde{F}_1(a;2a;z)\,{}_1\tilde{F}_1(c;2c;z) = \frac{2^{1-a-c}\,\pi^{3/2}}{\Gamma(a)\,\Gamma(c)}\,G_{3,5}^{1,2}\left(\frac{z^2}{4}\,\middle|\,\begin{array}{c}1-\frac{a+c}{2},\frac{1-a-c}{2},\frac{1}{2}\\0,1-a-c,\frac{1}{2}-c,\frac{1}{2}-a,\frac{1}{2}\end{array}\right)$$

Classical cases involving hypergeometric *U*

01.03.26.0063.01

$$e^{-z}\, U(a, b, z) = G_{1,2}^{2,0}\left(z \,\middle|\, \begin{matrix} a-b+1 \\ 0,\, 1-b \end{matrix}\right)$$

Classical cases involving cosh and hypergeometric *U*

01.03.26.0182.01

$$e^{-z} \cosh(z)\, U(a, b, 2z) = \frac{1}{2\,\Gamma(a)\,\Gamma(a-b+1)}\, G_{1,2}^{2,1}\left(2z \,\middle|\, \begin{matrix} 1-a \\ 0,\, 1-b \end{matrix}\right) + \frac{1}{2}\, G_{1,2}^{2,0}\left(2z \,\middle|\, \begin{matrix} a-b+1 \\ 0,\, 1-b \end{matrix}\right)$$

Classical cases involving sinh and hypergeometric *U*

01.03.26.0183.01

$$e^{-z} \sinh(z)\, U(a, b, 2z) = \frac{1}{2\,\Gamma(a)\,\Gamma(a-b+1)}\, G_{1,2}^{2,1}\left(2z \,\middle|\, \begin{matrix} 1-a \\ 0,\, 1-b \end{matrix}\right) - \frac{1}{2}\, G_{1,2}^{2,0}\left(2z \,\middle|\, \begin{matrix} a-b+1 \\ 0,\, 1-b \end{matrix}\right)$$

Classical cases involving products of hypergeometric *U*

01.03.26.0064.01

$$e^{-z}\, U(a, b, z)\, U(b-a, b, z) = \frac{2^{-b}}{\sqrt{\pi}}\, G_{2,4}^{4,0}\left(\frac{z^2}{4} \,\middle|\, \begin{matrix} a-b+1,\, 1-a \\ \frac{1-b}{2},\, 1-\frac{b}{2},\, 1-b,\, 0 \end{matrix}\right)$$

Classical cases involving $_1\tilde{F}_1$ and hypergeometric *U*

01.03.26.0113.01

$$e^{-\sqrt{z}}\, {}_1\tilde{F}_1\left(a; b; \sqrt{z}\right) U\left(b-a, b, \sqrt{z}\right) = \frac{2^{-b}}{\sqrt{\pi}\, \Gamma(b-a)}\, G_{2,4}^{3,1}\left(\frac{z}{4} \,\middle|\, \begin{matrix} a-b+1,\, 1-a \\ \frac{1-b}{2},\, 1-\frac{b}{2},\, 0,\, 1-b \end{matrix}\right)$$

01.03.26.0065.01

$$e^{-z}\, {}_1\tilde{F}_1(b-a; b; z)\, U(a, b, z) = \frac{2^{-b}}{\sqrt{\pi}\, \Gamma(a)}\, G_{2,4}^{3,1}\left(\frac{z^2}{4} \,\middle|\, \begin{matrix} 1-a,\, a-b+1 \\ 0,\, \frac{1-b}{2},\, 1-\frac{b}{2},\, 1-b \end{matrix}\right)$$

Classical cases involving $_1F_1$ and Laguerre *L*

01.03.26.0184.01

$$e^{-z}\, {}_1F_1(\nu+1; 1; z)\, L_\nu(z) = -\sqrt{\pi}\, \sin(\pi\nu)\, G_{3,5}^{1,2}\left(\frac{z^2}{4} \,\middle|\, \begin{matrix} \nu+1,\, -\nu,\, \frac{1}{2} \\ 0,\, 0,\, 0,\, \frac{1}{2},\, \frac{1}{2} \end{matrix}\right)$$

01.03.26.0185.01

$$e^{-z}\, {}_1F_1(\lambda+\nu+1; \lambda+1; z)\, L_\nu^\lambda(z) = -2^{-\lambda}\sqrt{\pi}\, \Gamma(\lambda+1)\sin(\pi\nu)\, G_{3,5}^{1,2}\left(\frac{z^2}{4} \,\middle|\, \begin{matrix} \nu+1,\, -\lambda-\nu,\, \frac{1}{2} \\ 0,\, -\frac{\lambda}{2},\, \frac{1}{2}-\frac{\lambda}{2},\, -\lambda,\, \frac{1}{2} \end{matrix}\right)$$

Classical cases involving $_1\tilde{F}_1$ and Laguerre *L*

01.03.26.0186.01

$$e^{-z}\, {}_1\tilde{F}_1(\nu+1; 1; z)\, L_\nu(z) = -\sqrt{\pi}\, \sin(\pi\nu)\, G_{3,5}^{1,2}\left(\frac{z^2}{4} \,\middle|\, \begin{matrix} \nu+1,\, -\nu,\, \frac{1}{2} \\ 0,\, 0,\, 0,\, \frac{1}{2},\, \frac{1}{2} \end{matrix}\right)$$

01.03.26.0187.01

$$e^{-z}\, {}_1\tilde{F}_1(\lambda+\nu+1;\lambda+1;z)\, L_\nu^\lambda(z) = -2^{-\lambda}\sqrt{\pi}\, \sin(\pi\nu)\, G_{3,5}^{1,2}\left(\frac{z^2}{4} \,\middle|\, \begin{matrix} \nu+1, -\lambda-\nu, \frac{1}{2} \\ 0, -\frac{\lambda}{2}, \frac{1}{2}-\frac{\lambda}{2}, -\lambda, \frac{1}{2} \end{matrix}\right)$$

Classical cases involving hypergeometric *U* and Laguerre *L*

01.03.26.0188.01

$$e^{-z}\, U(\nu+1,1,z)\, L_\nu(z) = \frac{1}{2\sqrt{\pi}\,\Gamma(\nu+1)}\, G_{2,4}^{3,1}\left(\frac{z^2}{4} \,\middle|\, \begin{matrix} -\nu, \nu+1 \\ 0, 0, \frac{1}{2}, 0 \end{matrix}\right) /; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

01.03.26.0189.01

$$e^{-z}\, U(\lambda+\nu+1,\lambda+1,z)\, L_\nu^\lambda(z) = \frac{2^{-\lambda-1}}{\sqrt{\pi}\,\Gamma(\nu+1)}\, G_{2,4}^{3,1}\left(\frac{z}{2}, \frac{1}{2} \,\middle|\, \begin{matrix} -\lambda-\nu, \nu+1 \\ 0, -\frac{\lambda}{2}, \frac{1}{2}-\frac{\lambda}{2}, -\lambda \end{matrix}\right) /; -\frac{\pi}{2} < \arg(z) \leq \frac{\pi}{2}$$

Classical cases involving WhittakerM *M*

01.03.26.0190.01

$$e^{z}\, M_{\nu,\mu}(2z) = \frac{\pi\,\Gamma(2\mu+1)}{\Gamma\left(\mu-\nu+\frac{1}{2}\right)}\, G_{2,3}^{1,1}\left(2z \,\middle|\, \begin{matrix} \nu+1, \mu+1 \\ \mu+\frac{1}{2}, \frac{1}{2}-\mu, \mu+1 \end{matrix}\right)$$

01.03.26.0191.01

$$e^{z}\, M_{\nu,\mu}(2z) = \frac{\Gamma(2\mu+1)\,(2z)^{\mu+\frac{1}{2}}}{\Gamma\left(\mu-\nu+\frac{1}{2}\right)}\, G_{1,2}^{1,1}\left(-2z \,\middle|\, \begin{matrix} \nu-\mu+\frac{1}{2} \\ 0, -2\mu \end{matrix}\right)$$

01.03.26.0192.01

$$e^{-z}\, M_{\nu,\mu}(2z) = \frac{\Gamma(2\mu+1)}{\Gamma\left(\mu+\nu+\frac{1}{2}\right)}\, G_{1,2}^{1,1}\left(2z \,\middle|\, \begin{matrix} 1-\nu \\ \mu+\frac{1}{2}, \frac{1}{2}-\mu \end{matrix}\right)$$

Classical cases involving WhittakerW *W*

01.03.26.0193.01

$$e^{z}\, W_{\nu,\mu}(2z) = \frac{1}{\Gamma\left(\frac{1}{2}-\mu-\nu\right)\Gamma\left(\mu-\nu+\frac{1}{2}\right)}\, G_{1,2}^{2,1}\left(2z \,\middle|\, \begin{matrix} \nu+1 \\ \mu+\frac{1}{2}, \frac{1}{2}-\mu \end{matrix}\right)$$

01.03.26.0194.01

$$e^{-z}\, W_{\nu,\mu}(2z) = G_{1,2}^{2,0}\left(2z \,\middle|\, \begin{matrix} 1-\nu \\ \mu+\frac{1}{2}, \frac{1}{2}-\mu \end{matrix}\right)$$

Generalized cases for the direct function itself

01.03.26.0066.01

$$e^{-z} = \frac{1}{\sqrt{\pi}}\, G_{0,2}^{2,0}\left(\frac{z}{2}, \frac{1}{2} \,\middle|\, 0, \frac{1}{2}\right)$$

Generalized cases involving cos

01.03.26.0067.01

$$e^{-z}\cos(z) = \frac{1}{\sqrt{2\pi}}\, G_{0,4}^{3,0}\left(\frac{z}{2\sqrt{2}}, \frac{1}{4} \,\middle|\, 0, \frac{1}{4}, \frac{3}{4}, \frac{1}{2}\right)$$

01.03.26.0068.01

$$e^{-z}\cos\left(z\sqrt{3}\right) = \frac{\sqrt{3}}{2}\,G_{1,4}^{3,0}\!\left(\frac{2z}{3},\frac{1}{3}\;\middle|\;\begin{matrix}\frac{1}{2}\\0,\frac{1}{3},\frac{2}{3},\frac{1}{2}\end{matrix}\right)$$

01.03.26.0069.01

$$e^{-z}\cos\left(\frac{z}{\sqrt{3}}\right) = \frac{\sqrt{3}}{4\pi^{3/2}}\,G_{0,6}^{5,0}\!\left(\frac{z}{3\sqrt{3}},\frac{1}{6}\;\middle|\;0,\frac{1}{6},\frac{1}{3},\frac{2}{3},\frac{5}{6},\frac{1}{2}\right)$$

Generalized cases involving sin

01.03.26.0070.01

$$e^{-z}\sin(z) = \frac{1}{\sqrt{2\pi}}\,G_{0,4}^{3,0}\!\left(\frac{z}{2\sqrt{2}},\frac{1}{4}\;\middle|\;\frac{1}{4},\frac{1}{2},\frac{3}{4},0\right)$$

01.03.26.0071.01

$$e^{-z}\sin\left(z\sqrt{3}\right) = \frac{1}{2}\sqrt{3}\,G_{0,3}^{2,0}\!\left(\frac{2z}{3},\frac{1}{3}\;\middle|\;\frac{1}{3},\frac{2}{3},0\right)$$

01.03.26.0072.01

$$e^{-z}\sin\left(\frac{z}{\sqrt{3}}\right) = \frac{\sqrt{3}}{4\pi^{3/2}}\,G_{0,6}^{5,0}\!\left(\frac{z}{3\sqrt{3}},\frac{1}{6}\;\middle|\;\frac{1}{6},\frac{1}{3},\frac{1}{2},\frac{2}{3},\frac{5}{6},0\right)$$

Generalized cases involving erf

01.03.26.0195.01

$$e^{z^2}\operatorname{erf}(z) = -\pi\,G_{2,3}^{1,1}\!\left(z,\frac{1}{2}\;\middle|\;\begin{matrix}\frac{1}{2},0\\\frac{1}{2},0,0\end{matrix}\right)$$

01.03.26.0114.01

$$e^{z}\operatorname{erf}\left(\sqrt{z}\right) = (1+i)\sqrt{2\pi}\,G_{1,3}^{1,1}\!\left(-\frac{iz}{2},\frac{1}{2}\;\middle|\;\begin{matrix}\frac{1}{4}\\\frac{1}{4},0,\frac{1}{2}\end{matrix}\right) - G_{1,2}^{1,1}\!\left(z\;\middle|\;\begin{matrix}\frac{1}{2}\\\frac{1}{2},0\end{matrix}\right)\;/;\;-\frac{\pi}{2} < \arg(z) \le \pi$$

Generalized cases involving erfc

01.03.26.0073.01

$$e^{z^2}\operatorname{erfc}(z) = \frac{1}{\pi}\,G_{1,2}^{2,1}\!\left(z,\frac{1}{2}\;\middle|\;\begin{matrix}\frac{1}{2}\\0,\frac{1}{2}\end{matrix}\right)$$

Generalized cases involving erfi

01.03.26.0074.01

$$e^{-z^2}\operatorname{erfi}(z) = G_{1,2}^{1,1}\!\left(z,\frac{1}{2}\;\middle|\;\begin{matrix}\frac{1}{2}\\\frac{1}{2},0\end{matrix}\right)$$

Generalized cases involving incomplete gamma functions ||| Generalized cases involving incomplete gamma functions

01.03.26.0196.01

$$e^{-z}\,\Gamma(a,-z) - e^{z}\,\Gamma(a,z) = \frac{1}{\sqrt{\pi}\,\Gamma(1-a)}\,G_{2,4}^{3,2}\!\left(\frac{\sqrt{-z^2}}{2},\frac{1}{2}\;\middle|\;\begin{matrix}\frac{a}{2},\frac{a+1}{2}\\\frac{a}{2},\frac{a+1}{2},0,\frac{1}{2}\end{matrix}\right)$$

01.03.26.0197.01

$$e^{-z}\,\Gamma(a,-z)-e^{z}\,\Gamma(a,z)=-\frac{\sqrt{-z^2}}{\sqrt{\pi}\,\Gamma(1-a)\,z}\,G_{2,4}^{3,2}\!\left(\frac{\sqrt{-z^2}}{2},\frac{1}{2}\,\middle|\,\begin{matrix}\frac{a}{2},\frac{a+1}{2}\\ \frac{a}{2},\frac{a+1}{2},\frac{1}{2},0\end{matrix}\right)$$

01.03.26.0198.01

$$e^{\frac{\pi i a}{2}-z}\,\Gamma(a,-z)+e^{-\frac{1}{2}(\pi i a)+z}\,\Gamma(a,z)=\frac{1}{\sqrt{\pi}\,\Gamma(1-a)}\,G_{1,3}^{3,1}\!\left(\frac{\sqrt{-z^2}}{2},\frac{1}{2}\,\middle|\,\begin{matrix}\frac{a}{2}\\ 0,\frac{1}{2},\frac{a}{2}\end{matrix}\right)/;\,0<\arg(z)\leq\pi$$

01.03.26.0199.01

$$e^{\frac{\pi i a}{2}-z}\,\Gamma(a,-z)-e^{-\frac{1}{2}(\pi i a)+z}\,\Gamma(a,z)=\frac{i}{\sqrt{\pi}\,\Gamma(1-a)}\,G_{1,3}^{3,1}\!\left(\frac{\sqrt{-z^2}}{2},\frac{1}{2}\,\middle|\,\begin{matrix}\frac{a+1}{2}\\ 0,\frac{1}{2},\frac{a+1}{2}\end{matrix}\right)/;\,0<\arg(z)\leq\pi$$

Generalized cases involving regularized incomplete gamma functions *Q*

01.03.26.0200.01

$$e^{-z}\,Q(a,-z)+e^{z}\,Q(a,z)=\frac{\sin(a\pi)}{\pi^{3/2}}\,G_{2,4}^{3,2}\!\left(\frac{\sqrt{-z^2}}{2},\frac{1}{2}\,\middle|\,\begin{matrix}\frac{a}{2},\frac{a+1}{2}\\ \frac{a}{2},\frac{a+1}{2},0,\frac{1}{2}\end{matrix}\right)$$

01.03.26.0201.01

$$e^{-z}\,Q(a,-z)-e^{z}\,Q(a,z)=\frac{z\sin(a\pi)}{\pi^{3/2}\sqrt{-z^2}}\,G_{2,4}^{3,2}\!\left(\frac{\sqrt{-z^2}}{2},\frac{1}{2}\,\middle|\,\begin{matrix}\frac{a}{2},\frac{a+1}{2}\\ \frac{a}{2},\frac{a+1}{2},\frac{1}{2},0\end{matrix}\right)$$

01.03.26.0202.01

$$e^{\frac{\pi i a}{2}-z}\,Q(a,-z)+e^{-\frac{1}{2}(\pi i a)+z}\,Q(a,z)=\frac{\sin(a\pi)}{\pi^{3/2}}\,G_{1,3}^{3,1}\!\left(\frac{\sqrt{-z^2}}{2},\frac{1}{2}\,\middle|\,\begin{matrix}\frac{a}{2}\\ 0,\frac{1}{2},\frac{a}{2}\end{matrix}\right)/;\,0<\arg(z)\leq\pi$$

01.03.26.0203.01

$$e^{\frac{\pi i a}{2}-z}\,Q(a,-z)-e^{-\frac{1}{2}(\pi i a)+z}\,Q(a,z)=\frac{i\sin(a\pi)}{\pi^{3/2}}\,G_{1,3}^{3,1}\!\left(\frac{\sqrt{-z^2}}{2},\frac{1}{2}\,\middle|\,\begin{matrix}\frac{a+1}{2}\\ 0,\frac{1}{2},\frac{a+1}{2}\end{matrix}\right)/;\,0<\arg(z)\leq\pi$$

Generalized cases involving Ai

01.03.26.0204.01

$$e^{-\frac{1}{3}\left(2z^{3/2}\right)}\,\mathrm{Ai}(z)=\frac{1}{2^{2/3}\sqrt[6]{3}\,\sqrt{\pi}}\,G_{1,2}^{2,0}\!\left(\frac{2\sqrt[3]{2}\,z}{3^{2/3}},\frac{2}{3}\,\middle|\,\begin{matrix}\frac{5}{6}\\ 0,\frac{2}{3}\end{matrix}\right)$$

01.03.26.0205.01

$$e^{\frac{2z^{3/2}}{3}}\,\mathrm{Ai}(z)=\frac{1}{2\,2^{2/3}\sqrt[6]{3}\,\pi^{3/2}}\,G_{1,2}^{2,1}\!\left(\frac{2\sqrt[3]{2}\,z}{3^{2/3}},\frac{2}{3}\,\middle|\,\begin{matrix}\frac{5}{6}\\ 0,\frac{2}{3}\end{matrix}\right)$$

Generalized cases involving Ai′

01.03.26.0206.01

$$e^{-\frac{1}{3}\left(2z^{3/2}\right)}\,\mathrm{Ai}'(z)=-\frac{\sqrt[6]{3}}{2\sqrt[3]{2}\,\sqrt{\pi}}\,G_{1,2}^{2,0}\!\left(\frac{2\sqrt[3]{2}\,z}{3^{2/3}},\frac{2}{3}\,\middle|\,\begin{matrix}\frac{7}{6}\\ 0,\frac{4}{3}\end{matrix}\right)$$

01.03.26.0207.01

$$e^{\frac{2z^{3/2}}{3}} \mathrm{Ai}'(z) = \frac{\sqrt[6]{3}}{4\sqrt[3]{2}\,\pi^{3/2}} G_{1,2}^{2,1}\left(\frac{2\sqrt[3]{2}\,z}{3^{2/3}}, \frac{2}{3} \middle| \begin{matrix} \frac{7}{6} \\ 0, \frac{4}{3} \end{matrix}\right)$$

Generalized cases involving Bi

01.03.26.0208.01

$$e^{-\frac{1}{3}(2z^{3/2})} \mathrm{Bi}(z) = \frac{1}{2^{2/3}\sqrt[6]{3}\,\sqrt{\pi}} G_{2,3}^{2,1}\left(\frac{2\sqrt[3]{2}\,z}{3^{2/3}}, \frac{2}{3} \middle| \begin{matrix} \frac{5}{6}, \frac{1}{3} \\ 0, \frac{2}{3}, \frac{1}{3} \end{matrix}\right)$$

01.03.26.0209.01

$$e^{\frac{2z^{3/2}}{3}} \mathrm{Bi}(z) = \frac{\sqrt[3]{2}\,\sqrt{\pi}}{\sqrt[6]{3}} G_{2,3}^{2,0}\left(\frac{2\sqrt[3]{2}\,z}{3^{2/3}}, \frac{2}{3} \middle| \begin{matrix} \frac{1}{3}, \frac{5}{6} \\ 0, \frac{2}{3}, \frac{1}{3} \end{matrix}\right)$$

Generalized cases involving Bi′

01.03.26.0210.01

$$e^{-\frac{1}{3}(2z^{3/2})} \mathrm{Bi}'(z) = \frac{\sqrt[6]{3}}{2\sqrt[3]{2}\,\sqrt{\pi}} G_{2,3}^{2,1}\left(\frac{2\sqrt[3]{2}\,z}{3^{2/3}}, \frac{2}{3} \middle| \begin{matrix} \frac{7}{6}, -\frac{1}{3} \\ 0, \frac{4}{3}, -\frac{1}{3} \end{matrix}\right)$$

01.03.26.0211.01

$$e^{\frac{2z^{3/2}}{3}} \mathrm{Bi}'(z) = -\frac{\sqrt[6]{3}\,\sqrt{\pi}}{\sqrt[3]{2}} G_{2,3}^{2,0}\left(\frac{2\sqrt[3]{2}\,z}{3^{2/3}}, \frac{2}{3} \middle| \begin{matrix} -\frac{1}{3}, \frac{7}{6} \\ 0, \frac{4}{3}, -\frac{1}{3} \end{matrix}\right)$$

Generalized cases involving parabolic cylinder function *D*

01.03.26.0212.01

$$e^{z^2} D_\nu(2z) = \frac{2^{-\frac{\nu}{2}-1}}{\sqrt{\pi}\,\Gamma(-\nu)} G_{1,2}^{2,1}\left(\sqrt{2}\,z, \frac{1}{2} \middle| \begin{matrix} \frac{\nu}{2}+1 \\ 0, \frac{1}{2} \end{matrix}\right)$$

01.03.26.0213.01

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

01.03.26.0214.01

$$e^{z^2} D_\nu(-2z) = \frac{2^{\frac{1-\nu}{2}}\pi^{3/2}}{\Gamma(-\nu)} G_{3,4}^{2,1}\left(\sqrt{2}\,z, \frac{1}{2} \middle| \begin{matrix} \frac{\nu}{2}+1, \frac{1}{8}, \frac{5}{8} \\ 0, \frac{1}{2}, \frac{1}{8}, \frac{5}{8} \end{matrix}\right)$$

01.03.26.0215.01

$$e^{-z^2} D_\nu(-2z) = 2^{\nu/2} G_{2,3}^{2,1}\left(\sqrt{2}\,z, \frac{1}{2} \middle| \begin{matrix} \frac{1-\nu}{2}, \frac{\nu+1}{2} \\ 0, \frac{1}{2}, \frac{\nu+1}{2} \end{matrix}\right)$$

01.03.26.0216.01

$$e^{z^2} (D_\nu(2z) + D_\nu(-2z)) = \frac{2^{\frac{1-\nu}{2}}\pi^{3/2}}{\Gamma(-\nu)} G_{2,3}^{1,1}\left(\sqrt{2}\,z, \frac{1}{2} \middle| \begin{matrix} \frac{\nu}{2}+1, \frac{1}{4} \\ 0, \frac{1}{2}, \frac{1}{4} \end{matrix}\right)$$

01.03.26.0217.01

$$e^{z^2}\,(D_\nu(2\,z)-D_\nu(-2\,z))=\frac{2^{\frac{1-\nu}{2}}\,\pi^{3/2}}{\Gamma(-\nu)}\,G_{2,3}^{1,1}\!\left(\sqrt{2}\,z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{\nu}{2}+1,\,\frac{1}{4}\\ \frac{1}{2},\,0,\,\frac{1}{4}\end{array}\right)$$

01.03.26.0218.01

$$e^{-z^2}\,(D_\nu(2\,z)+D_\nu(-2\,z))=2^{\frac{\nu}{2}+1}\cos\!\left(\frac{\pi\,\nu}{2}\right)G_{1,2}^{1,1}\!\left(\sqrt{2}\,z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{1-\nu}{2}\\ 0,\,\frac{1}{2}\end{array}\right)$$

01.03.26.0219.01

$$e^{-z^2}\,(D_\nu(2\,z)-D_\nu(-2\,z))=2^{\frac{\nu}{2}+1}\sin\!\left(\frac{\pi\,\nu}{2}\right)G_{1,2}^{1,1}\!\left(\sqrt{2}\,z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{1-\nu}{2}\\ \frac{1}{2},\,0\end{array}\right)$$

Generalized cases involving Hermite *H*

01.03.26.0220.01

$$e^{-z^2}\,H_\nu(z)=2^\nu\,G_{1,2}^{2,0}\!\left(z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{1-\nu}{2}\\ 0,\,\frac{1}{2}\end{array}\right)$$

01.03.26.0221.01

$$e^{-z^2}\,H_\nu(-z)=2^\nu\,G_{2,3}^{2,1}\!\left(z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{1-\nu}{2},\,\frac{\nu+1}{2}\\ 0,\,\frac{1}{2},\,\frac{\nu+1}{2}\end{array}\right)$$

01.03.26.0222.01

$$e^{-z^2}\,(H_\nu(z)+H_\nu(-z))=2^{\nu+1}\cos\!\left(\frac{\pi\,\nu}{2}\right)G_{1,2}^{1,1}\!\left(z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{1-\nu}{2}\\ 0,\,\frac{1}{2}\end{array}\right)$$

01.03.26.0223.01

$$e^{-z^2}\,(H_\nu(z)-H_\nu(-z))=2^{\nu+1}\sin\!\left(\frac{\pi\,\nu}{2}\right)G_{1,2}^{1,1}\!\left(z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{1-\nu}{2}\\ \frac{1}{2},\,0\end{array}\right)$$

Generalized cases involving cosh and Hermite *H*

01.03.26.0224.01

$$e^{-z^2}\cosh(z^2)\,H_\nu\!\left(\sqrt{2}\,z\right)=2^{\nu-1}\,G_{1,2}^{2,0}\!\left(\sqrt{2}\,z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{1-\nu}{2}\\ 0,\,\frac{1}{2}\end{array}\right)+\frac{1}{4\,\sqrt{\pi}\,\Gamma(-\nu)}\,G_{1,2}^{2,1}\!\left(\sqrt{2}\,z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{\nu}{2}+1\\ 0,\,\frac{1}{2}\end{array}\right)$$

01.03.26.0225.01

$$e^{-z^2}\cosh(z^2)\,H_\nu\!\left(-\sqrt{2}\,z\right)=2^{\nu-1}\,G_{2,3}^{2,1}\!\left(\sqrt{2}\,z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{1-\nu}{2},\,\frac{\nu+1}{2}\\ 0,\,\frac{1}{2},\,\frac{\nu+1}{2}\end{array}\right)+\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{3,4}^{2,1}\!\left(\sqrt{2}\,z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{\nu}{2}+1,\,\frac{1}{8},\,\frac{5}{8}\\ 0,\,\frac{1}{2},\,\frac{1}{8},\,\frac{5}{8}\end{array}\right)$$

01.03.26.0226.01

$$e^{-z^2}\cosh(z^2)\left(H_\nu\!\left(\sqrt{2}\,z\right)+H_\nu\!\left(-\sqrt{2}\,z\right)\right)=2^\nu\cos\!\left(\frac{\pi\,\nu}{2}\right)G_{1,2}^{1,1}\!\left(\sqrt{2}\,z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{1-\nu}{2}\\ 0,\,\frac{1}{2}\end{array}\right)+\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{2,3}^{1,1}\!\left(\sqrt{2}\,z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{\nu}{2}+1,\,\frac{1}{4}\\ 0,\,\frac{1}{2},\,\frac{1}{4}\end{array}\right)$$

01.03.26.0227.01

$$e^{-z^2}\cosh(z^2)\left(H_\nu\!\left(\sqrt{2}\,z\right)-H_\nu\!\left(-\sqrt{2}\,z\right)\right)=\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{2,3}^{1,1}\!\left(\sqrt{2}\,z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{\nu}{2}+1,\,\frac{1}{4}\\ \frac{1}{2},\,0,\,\frac{1}{4}\end{array}\right)+2^\nu\sin\!\left(\frac{\pi\,\nu}{2}\right)G_{1,2}^{1,1}\!\left(\sqrt{2}\,z,\,\frac{1}{2}\,\middle|\,\begin{array}{c}\frac{1-\nu}{2}\\ \frac{1}{2},\,0\end{array}\right)$$

Generalized cases involving sinh and Hermite H

01.03.26.0228.01

$$e^{-z^2}\sinh(z^2)\,H_\nu\!\left(\sqrt{2}\,z\right)=\frac{1}{4\sqrt{\pi}\,\Gamma(-\nu)}\,G_{1,2}^{2,1}\!\left(\sqrt{2}\,z,\frac{1}{2}\,\middle|\,\begin{matrix}\frac{\nu}{2}+1\\0,\frac{1}{2}\end{matrix}\right)-2^{\nu-1}\,G_{1,2}^{2,0}\!\left(\sqrt{2}\,z,\frac{1}{2}\,\middle|\,\begin{matrix}\frac{1-\nu}{2}\\0,\frac{1}{2}\end{matrix}\right)$$

01.03.26.0229.01

$$e^{-z^2}\sinh(z^2)\,H_\nu\!\left(-\sqrt{2}\,z\right)=\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{3,4}^{2,1}\!\left(\sqrt{2}\,z,\frac{1}{2}\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\frac{1}{8},\frac{5}{8}\\0,\frac{1}{2},\frac{1}{8},\frac{5}{8}\end{matrix}\right)-2^{\nu-1}\,G_{2,3}^{2,1}\!\left(\sqrt{2}\,z,\frac{1}{2}\,\middle|\,\begin{matrix}\frac{1-\nu}{2},\frac{\nu+1}{2}\\0,\frac{1}{2},\frac{\nu+1}{2}\end{matrix}\right)$$

01.03.26.0230.01

$$e^{-z^2}\sinh(z^2)\left(H_\nu\!\left(-\sqrt{2}\,z\right)+H_\nu\!\left(\sqrt{2}\,z\right)\right)=\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{2,3}^{1,1}\!\left(\sqrt{2}\,z,\frac{1}{2}\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\frac{1}{4}\\0,\frac{1}{2},\frac{1}{4}\end{matrix}\right)-2^{\nu}\cos\!\left(\frac{\pi\nu}{2}\right)G_{1,2}^{1,1}\!\left(\sqrt{2}\,z,\frac{1}{2}\,\middle|\,\begin{matrix}\frac{1-\nu}{2}\\0,\frac{1}{2}\end{matrix}\right)$$

01.03.26.0231.01

$$e^{-z^2}\sinh(z^2)\left(H_\nu\!\left(\sqrt{2}\,z\right)-H_\nu\!\left(-\sqrt{2}\,z\right)\right)=\frac{\pi^{3/2}}{\sqrt{2}\,\Gamma(-\nu)}\,G_{2,3}^{1,1}\!\left(\sqrt{2}\,z,\frac{1}{2}\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\frac{1}{4}\\\frac{1}{2},0,\frac{1}{4}\end{matrix}\right)-2^{\nu}\sin\!\left(\frac{\pi\nu}{2}\right)G_{1,2}^{1,1}\!\left(\sqrt{2}\,z,\frac{1}{2}\,\middle|\,\begin{matrix}\frac{1-\nu}{2}\\\frac{1}{2},0\end{matrix}\right)$$

Generalized cases involving parabolic cylinder D and Hermite H

01.03.26.0232.01

$$e^{z^2}\,H_\nu\!\left(-i\sqrt{2}\,z\right)D_\nu(2z)=\frac{2^{\frac{\nu-3}{2}}}{\pi\,\Gamma(-\nu)}\,G_{2,4}^{4,1}\!\left(e^{-\frac{1}{4}(i\pi)}\,z,\frac{1}{4}\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\frac{1-\nu}{2}\\0,\frac{1}{4},\frac{1}{2},\frac{3}{4}\end{matrix}\right)$$

01.03.26.0233.01

$$e^{-z^2}\,H_{-\nu-1}\!\left(\sqrt{2}\,z\right)D_\nu(2z)=\frac{2^{-\frac{1}{2}(\nu+3)}}{\sqrt{\pi}}\,G_{2,4}^{4,0}\!\left(z,\frac{1}{4}\,\middle|\,\begin{matrix}\frac{\nu}{2}+1,\frac{1-\nu}{2}\\0,\frac{1}{4},\frac{1}{2},\frac{3}{4}\end{matrix}\right)$$

Generalized cases involving products of Hermite H

01.03.26.0234.01

$$e^{-z}\,H_{-\nu-1}\!\left(\sqrt{z}\right)H_\nu\!\left(\sqrt{z}\right)=\frac{1}{2\sqrt{2\pi}}\,G_{2,4}^{4,0}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}\frac{1-\nu}{2},\frac{\nu}{2}+1\\0,\frac{1}{4},\frac{1}{2},\frac{3}{4}\end{matrix}\right)$$

01.03.26.0235.01

$$e^{-z^2}\,H_{-\nu-1}(z)\,H_\nu(z)=\frac{1}{2\sqrt{2\pi}}\,G_{2,4}^{4,0}\!\left(\frac{z}{\sqrt{2}},\frac{1}{4}\,\middle|\,\begin{matrix}\frac{1-\nu}{2},\frac{\nu}{2}+1\\0,\frac{1}{4},\frac{1}{2},\frac{3}{4}\end{matrix}\right)$$

Generalized cases involving products of Laguerre L

01.03.26.0236.01

$$e^{-z}\,L_{-\nu-1}(z)\,L_\nu(z)=-\sqrt{\pi}\,\sin(\pi\nu)\,G_{3,5}^{1,2}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}\nu+1,-\nu,\frac{1}{2}\\0,0,0,\frac{1}{2},\frac{1}{2}\end{matrix}\right)$$

01.03.26.0237.01

$$e^{-z}\,L_{-\lambda-\nu-1}^{\lambda}(z)\,L_\nu^{\lambda}(z)=-\frac{2^{-\lambda}\sqrt{\pi}\,\Gamma(-\nu)\sin(\pi\nu)}{\Gamma(-\lambda-\nu)}\,G_{3,5}^{1,2}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}\nu+1,-\lambda-\nu,\frac{1}{2}\\0,-\frac{\lambda}{2},\frac{1-\lambda}{2},-\lambda,\frac{1}{2}\end{matrix}\right)$$

Generalized cases involving products of ${}_1F_1$

01.03.26.0238.01

$$e^{-z}\,{}_1F_1(a;b;z)\,{}_1F_1(b-a;b;z)=\frac{2^{1-b}\sqrt{\pi}\,\Gamma(b)^2}{\Gamma(a)\,\Gamma(b-a)}\,G_{2,4}^{1,2}\!\left(\frac{i\,z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}1-a,\,a-b+1\\0,\,\frac{1-b}{2},\,1-\frac{b}{2},\,1-b\end{matrix}\right)$$

01.03.26.0239.01

$$e^{-z}\,{}_1F_1(a;b;z)\,{}_1F_1(b-a;b;z)=\frac{2^{1-b}\,\pi^{3/2}\,\Gamma(b)^2}{\Gamma(a)\,\Gamma(b-a)}\,G_{3,5}^{1,2}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}1-a,\,a-b+1,\,\frac{1}{2}\\0,\,\frac{1-b}{2},\,1-\frac{b}{2},\,1-b,\,\frac{1}{2}\end{matrix}\right)$$

01.03.26.0240.01

$$e^{-z}\,{}_1F_1(a;2a;z)\,{}_1F_1(c;2c;z)=\frac{2^{a+c-1}}{\sqrt{\pi}}\,\Gamma\!\left(a+\frac{1}{2}\right)\Gamma\!\left(c+\frac{1}{2}\right)G_{2,4}^{1,2}\!\left(-\frac{1}{2}\,(i\,z),\frac{1}{2}\,\middle|\,\begin{matrix}1-\frac{a+c}{2},\,\frac{1}{2}\,(-a-c+1)\\0,\,-a-c+1,\,\frac{1}{2}-c,\,\frac{1}{2}-a\end{matrix}\right)$$

01.03.26.0241.01

$$e^{-z}\,{}_1F_1(a;2a;z)\,{}_1F_1(c;2c;z)=2^{a+c-1}\sqrt{\pi}\,\Gamma\!\left(a+\frac{1}{2}\right)\Gamma\!\left(c+\frac{1}{2}\right)G_{3,5}^{1,2}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}1-\frac{a+c}{2},\,\frac{1}{2}\,(-a-c+1),\,\frac{1}{2}\\0,\,-a-c+1,\,\frac{1}{2}-c,\,\frac{1}{2}-a,\,\frac{1}{2}\end{matrix}\right)$$

Generalized cases involving ${}_1F_1$ and ${}_1\tilde{F}_1$

01.03.26.0242.01

$$e^{-z}\,{}_1F_1(a;b;z)\,{}_1\tilde{F}_1(b-a;b;z)=\frac{2^{1-b}\sqrt{\pi}\,\Gamma(b)}{\Gamma(a)\,\Gamma(b-a)}\,G_{2,4}^{1,2}\!\left(\frac{i\,z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}1-a,\,a-b+1\\0,\,\frac{1-b}{2},\,1-\frac{b}{2},\,1-b\end{matrix}\right)$$

01.03.26.0243.01

$$e^{-z}\,{}_1F_1(a;b;z)\,{}_1\tilde{F}_1(b-a;b;z)=\frac{2^{1-b}\,\pi^{3/2}\,\Gamma(b)}{\Gamma(a)\,\Gamma(b-a)}\,G_{3,5}^{1,2}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}1-a,\,a-b+1,\,\frac{1}{2}\\0,\,\frac{1-b}{2},\,1-\frac{b}{2},\,1-b,\,\frac{1}{2}\end{matrix}\right)$$

01.03.26.0244.01

$$e^{-z}\,{}_1F_1(a;2a;z)\,{}_1\tilde{F}_1(c;2c;z)=\frac{2^{a-c}\,\Gamma\!\left(a+\frac{1}{2}\right)}{\Gamma(c)}\,G_{2,4}^{1,2}\!\left(-\frac{1}{2}\,(i\,z),\frac{1}{2}\,\middle|\,\begin{matrix}1-\frac{a+c}{2},\,\frac{1}{2}\,(-a-c+1)\\0,\,-a-c+1,\,\frac{1}{2}-c,\,\frac{1}{2}-a\end{matrix}\right)$$

01.03.26.0245.01

$$e^{-z}\,{}_1F_1(a;2a;z)\,{}_1\tilde{F}_1(c;2c;z)=\frac{2^{a-c}\,\pi\,\Gamma\!\left(a+\frac{1}{2}\right)}{\Gamma(c)}\,G_{3,5}^{1,2}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}1-\frac{a+c}{2},\,\frac{1}{2}\,(-a-c+1),\,\frac{1}{2}\\0,\,-a-c+1,\,\frac{1}{2}-c,\,\frac{1}{2}-a,\,\frac{1}{2}\end{matrix}\right)$$

Generalized cases involving ${}_1F_1$ and hypergeometric U

01.03.26.0246.01

$$e^{-z}\,{}_1F_1(a;b;z)\,U(b-a,b,z)=\frac{2^{-b}\,\Gamma(b)}{\sqrt{\pi}\,\Gamma(b-a)}\,G_{2,4}^{3,1}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}a-b+1,\,1-a\\\frac{1-b}{2},\,1-\frac{b}{2},\,0,\,1-b\end{matrix}\right)$$

Generalized cases involving products of ${}_1\tilde{F}_1$

01.03.26.0247.01

$$e^{-z}\,{}_1\tilde{F}_1(a;b;z)\,{}_1\tilde{F}_1(b-a;b;z)=\frac{2^{1-b}\sqrt{\pi}}{\Gamma(a)\,\Gamma(b-a)}\,G_{2,4}^{1,2}\!\left(\frac{i\,z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}1-a,\,a-b+1\\0,\,\frac{1-b}{2},\,1-\frac{b}{2},\,1-b\end{matrix}\right)$$

01.03.26.0248.01

$$e^{-z}\,{}_1\tilde{F}_1(a;b;z)\,{}_1\tilde{F}_1(b-a;b;z)=\frac{2^{1-b}\,\pi^{3/2}}{\Gamma(a)\,\Gamma(b-a)}\,G_{3,5}^{1,2}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}1-a,\,a-b+1,\,\frac{1}{2}\\0,\,\frac{1-b}{2},\,1-\frac{b}{2},\,1-b,\,\frac{1}{2}\end{matrix}\right)$$

01.03.26.0249.01

$$e^{-z}\,{}_1\tilde{F}_1(a;2a;z)\,{}_1\tilde{F}_1(c;2c;z)=\frac{2^{-a-c+1}\sqrt{\pi}}{\Gamma(a)\,\Gamma(c)}\,G_{2,4}^{1,2}\!\left(-\frac{1}{2}(i\,z),\frac{1}{2}\,\middle|\,\begin{matrix}1-\frac{a+c}{2},\,\frac{1}{2}(-a-c+1)\\0,\,-a-c+1,\,\frac{1}{2}-c,\,\frac{1}{2}-a\end{matrix}\right)$$

01.03.26.0250.01

$$e^{-z}\,{}_1\tilde{F}_1(a;2a;z)\,{}_1\tilde{F}_1(c;2c;z)=\frac{2^{-a-c+1}\,\pi^{3/2}}{\Gamma(a)\,\Gamma(c)}\,G_{3,5}^{1,2}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}1-\frac{a+c}{2},\,\frac{1}{2}(-a-c+1),\,\frac{1}{2}\\0,\,-a-c+1,\,\frac{1}{2}-c,\,\frac{1}{2}-a,\,\frac{1}{2}\end{matrix}\right)$$

Generalized cases involving ${}_1F_1$ and Laguerre L

01.03.26.0251.01

$$e^{-z}\,{}_1F_1(\nu+1;1;z)\,L_\nu(z)=-\sqrt{\pi}\,\sin(\pi\,\nu)\,G_{3,5}^{1,2}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}\nu+1,\,-\nu,\,\frac{1}{2}\\0,\,0,\,0,\,\frac{1}{2},\,\frac{1}{2}\end{matrix}\right)$$

01.03.26.0252.01

$$e^{-z}\,{}_1F_1(\lambda+\nu+1;\lambda+1;z)\,L_\nu^\lambda(z)=-2^{-\lambda}\sqrt{\pi}\,\Gamma(\lambda+1)\sin(\pi\,\nu)\,G_{3,5}^{1,2}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}\nu+1,\,-\lambda-\nu,\,\frac{1}{2}\\0,\,-\frac{\lambda}{2},\,\frac{1}{2}-\frac{\lambda}{2},\,-\lambda,\,\frac{1}{2}\end{matrix}\right)$$

Generalized cases involving ${}_1\tilde{F}_1$ and Laguerre L

01.03.26.0253.01

$$e^{-z}\,{}_1\tilde{F}_1(\nu+1;1;z)\,L_\nu(z)=-\sqrt{\pi}\,\sin(\pi\,\nu)\,G_{3,5}^{1,2}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}\nu+1,\,-\nu,\,\frac{1}{2}\\0,\,0,\,0,\,\frac{1}{2},\,\frac{1}{2}\end{matrix}\right)$$

01.03.26.0254.01

$$e^{-z}\,{}_1\tilde{F}_1(\lambda+\nu+1;\lambda+1;z)\,L_\nu^\lambda(z)=-2^{-\lambda}\sqrt{\pi}\,\sin(\pi\,\nu)\,G_{3,5}^{1,2}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}\nu+1,\,-\lambda-\nu,\,\frac{1}{2}\\0,\,-\frac{\lambda}{2},\,\frac{1}{2}-\frac{\lambda}{2},\,-\lambda,\,\frac{1}{2}\end{matrix}\right)$$

Generalized cases involving hypergeometric U and Laguerre L

01.03.26.0255.01

$$e^{-z}\,U(\nu+1,1,z)\,L_\nu(z)=\frac{1}{2\sqrt{\pi}\,\Gamma(\nu+1)}\,G_{2,4}^{3,1}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}-\nu,\,\nu+1\\0,\,0,\,\frac{1}{2},\,0\end{matrix}\right)$$

01.03.26.0256.01

$$e^{-z}\,U(\lambda+\nu+1,\lambda+1,z)\,L_\nu^\lambda(z)=\frac{2^{-\lambda-1}}{\sqrt{\pi}\,\Gamma(\nu+1)}\,G_{2,4}^{3,1}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}-\lambda-\nu,\,\nu+1\\0,\,-\frac{\lambda}{2},\,\frac{1}{2}-\frac{\lambda}{2},\,-\lambda\end{matrix}\right)$$

Generalized cases involving products of hypergeometric U

01.03.26.0257.01

$$e^{-z}\,U(a,b,z)\,U(b-a,b,z)=\frac{2^{-b}}{\sqrt{\pi}}\,G_{2,4}^{4,0}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}a-b+1,\,1-a\\\frac{1-b}{2},\,1-\frac{b}{2},\,1-b,\,0\end{matrix}\right)$$

Generalized cases involving ${}_1\tilde{F}_1$ and hypergeometric U

01.03.26.0258.01

$$e^{-z}\,{}_1\tilde{F}_1(b-a;b;z)\,U(a,b,z)=\frac{2^{-b}}{\sqrt{\pi}\,\Gamma(a)}\,G_{2,4}^{3,1}\!\left(\frac{z}{2},\frac{1}{2}\,\middle|\,\begin{matrix}1-a,\,a-b+1\\ \frac{1-b}{2},\,1-\frac{b}{2},\,0,\,1-b\end{matrix}\right)$$

Generalized cases involving WhittakerM M

01.03.26.0259.01

$$e^{z}\,M_{\nu,\mu}(2z)+e^{-z}\,M_{-\nu,\mu}(2z)=\frac{2^{1-\nu}\,\pi^{3/2}\,\Gamma(2\mu+1)}{\Gamma\!\left(\mu-\nu+\frac{1}{2}\right)}\,G_{3,5}^{1,2}\!\left(z,\frac{1}{2}\,\middle|\,\begin{matrix}\frac{\nu+1}{2},\,\frac{\nu+2}{2},\,\frac{1}{4}(2\mu+3)\\ \frac{1}{4}(2\mu+1),\,\frac{1}{4}(2\mu+3),\,\frac{1}{4}(1-2\mu),\,\frac{1}{4}(3-2\mu),\,\frac{1}{4}(2\mu+3)\end{matrix}\right)$$

01.03.26.0260.01

$$e^{z}\,M_{\nu,\mu}(2z)-e^{-z}\,M_{-\nu,\mu}(2z)=\frac{2^{1-\nu}\,\pi^{3/2}\,\Gamma(2\mu+1)}{\Gamma\!\left(\mu-\nu+\frac{1}{2}\right)}\,G_{3,5}^{1,2}\!\left(z,\frac{1}{2}\,\middle|\,\begin{matrix}\frac{\nu+1}{2},\,\frac{\nu+2}{2},\,\frac{1}{4}(2\mu+5)\\ \frac{1}{4}(2\mu+3),\,\frac{1}{4}(2\mu+1),\,\frac{1}{4}(2\mu+5),\,\frac{1}{4}(1-2\mu),\,\frac{1}{4}(3-2\mu)\end{matrix}\right)$$

Through other functions

Involving Bessel functions

01.03.26.0075.01

$$e^{z}=\sqrt{\frac{\pi i z}{2}}\,J_{-\frac{1}{2}}(iz)+i\sqrt{-\frac{\pi i z}{2}}\,J_{\frac{1}{2}}(-iz)$$

01.03.26.0076.01

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

01.03.26.0077.01

$$e^{z}=-\sqrt{-\frac{\pi i z}{2}}\,Y_{\frac{1}{2}}(-iz)-i\sqrt{\frac{\pi i z}{2}}\,Y_{-\frac{1}{2}}(iz)$$

01.03.26.0078.01

$$e^{z}=\sqrt{-\frac{2z}{\pi}}\,K_{\frac{1}{2}}(-z)$$

Involving Jacobi functions

01.03.26.0079.01

$$e^{z}=\operatorname{cd}(iz\,|\,0)-i\operatorname{cd}\!\left(\frac{\pi}{2}-iz\,\middle|\,0\right)$$

01.03.26.0080.01

$$e^{z}=\operatorname{cn}(iz\,|\,0)-i\operatorname{cn}\!\left(\frac{\pi}{2}-iz\,\middle|\,0\right)$$

01.03.26.0081.01

$$e^{z}=\frac{1}{\operatorname{cn}(z\,|\,1)}+\frac{i}{\operatorname{cn}\!\left(\frac{\pi i}{2}-z\,\middle|\,1\right)}$$

01.03.26.0082.01

$$e^{z}=\frac{1}{\operatorname{cs}(z\,|\,1)}-\frac{i}{\operatorname{cs}\!\left(\frac{\pi i}{2}-z\,\middle|\,1\right)}$$

01.03.26.0083.01

$$e^z == \frac{1}{\text{dc}(i\, z \mid 0)} - \frac{i}{\text{dc}\left(\frac{\pi}{2} - i\, z \,\middle|\, 0\right)}$$

01.03.26.0084.01

$$e^z == \frac{1}{\text{dn}(z \mid 1)} + \frac{i}{\text{dn}\left(\frac{\pi i}{2} - z \,\middle|\, 1\right)}$$

01.03.26.0085.01

$$e^z == \frac{1}{\text{ds}\left(\frac{\pi}{2} - i\, z \,\middle|\, 0\right)} - \frac{i}{\text{ds}(i\, z \mid 0)}$$

01.03.26.0086.01

$$e^z == \frac{1}{\text{ds}(z \mid 1)} - \frac{i}{\text{ds}\left(\frac{\pi i}{2} - z \,\middle|\, 1\right)}$$

01.03.26.0087.01

$$e^z == \frac{1}{\text{nc}(i\, z \mid 0)} - \frac{i}{\text{nc}\left(\frac{\pi}{2} - i\, z \,\middle|\, 0\right)}$$

01.03.26.0088.01

$$e^z == \text{nc}(z \mid 1) + i\, \text{nc}\left(\frac{\pi i}{2} - z \,\middle|\, 1\right)$$

01.03.26.0089.01

$$e^z == \text{nd}(z \mid 1) + i\, \text{nd}\left(\frac{\pi i}{2} - z \,\middle|\, 1\right)$$

01.03.26.0090.01

$$e^z == \frac{1}{\text{ns}\left(\frac{\pi}{2} - i\, z \,\middle|\, 0\right)} - \frac{i}{\text{ns}(i\, z \mid 0)}$$

01.03.26.0091.01

$$e^z == \text{sc}(z \mid 1) - i\, \text{sc}\left(\frac{\pi i}{2} - z \,\middle|\, 1\right)$$

01.03.26.0092.01

$$e^z == \text{sd}(z \mid 1) - i\, \text{sd}\left(\frac{\pi i}{2} - z \,\middle|\, 1\right)$$

01.03.26.0093.01

$$e^z == \text{sd}\left(\frac{\pi}{2} - i\, z \,\middle|\, 0\right) - i\, \text{sd}(i\, z \mid 0)$$

01.03.26.0094.01

$$e^z == \text{sn}\left(\frac{\pi}{2} - i\, z \,\middle|\, 0\right) - i\, \text{sn}(i\, z \mid 0)$$

Involving Mathieu functions

01.03.26.0095.01

$$e^{\sqrt{a}\, z} == \frac{1}{\sqrt{a}} \left(\text{Se}_z(a, 0, i\, z) + i\, \text{Ce}_z(a, 0, i\, z)\right)$$

01.03.26.0096.01

$$e^{\sqrt{a}\, z} = \mathrm{Ce}(a, 0, i z) - i\, \mathrm{Se}(a, 0, i z)$$

Involving some elliptic-type functions

01.03.26.0097.01

$$e^z = E\left(\frac{\pi}{2} - i z \,\middle|\, 1\right) - i\, E(i z \mid 1) \;/;\; -\frac{\pi}{2} \le \mathrm{Im}(z) \le 0$$

Involving some hypergeometric-type functions

01.03.26.0098.01

$$e^z = 1 - \sqrt{\frac{\pi i z}{2}} \left(\boldsymbol{H}_{\frac{1}{2}}(i z) - i\, \boldsymbol{H}_{-\frac{1}{2}}(i z)\right)$$

01.03.26.0099.01

$$e^z = 1 + \sqrt{\frac{\pi z}{2}} \left(\boldsymbol{L}_{\frac{1}{2}}(z) + \boldsymbol{L}_{-\frac{1}{2}}(z)\right)$$

01.03.26.0100.01

$$e^{n z} = T_n(\cosh(z)) + \sinh(z)\, U_{n-1}(\cosh(z))$$

Representations through equivalent functions

With inverse function Exp

01.03.27.0020.01

$$e^{\log(z)} = z$$

The left side of above formula corresponds to composition $f\left(f^{(-1)}(z)\right) /;\; f(z) = e^z$, which generically equal to z.

01.03.27.0021.01

$$e^{a \log(z)} = z^a$$

01.03.27.0022.01

$$\log(e^z) = z + 2 i \pi \left\lfloor \frac{\pi - \mathrm{Im}(z)}{2 \pi} \right\rfloor$$

The left side of above formula corresponds to composition $f^{(-1)}(f(z)) /;\; f(z) = e^z$, which generically does not equal to z.

01.03.27.0023.01

$$\log(e^z) = z \;/;\; -\pi < \mathrm{Im}(z) \le \pi$$

The left side of above formula corresponds to composition $f^{(-1)}(f(z)) /;\; f(z) = e^z$, which equal to z under restriction $-\pi < \mathrm{Im}(z) \le \pi$.

With related functions

Involving power function

01.03.27.0024.01

$$e^z = w^a \;/;\; a = \frac{z}{\log(w)}$$

Involving tan

01.03.27.0005.01

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

Involving cot

01.03.27.0006.01

$$e^{i z} = 1 - \frac{2}{i \cot\left(\frac{z}{2}\right) + 1}$$

Involving tanh

01.03.27.0007.01

$$e^{z} = \frac{2}{1 - \tanh\left(\frac{z}{2}\right)} - 1$$

Involving coth

01.03.27.0008.01

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

Involving trigonometric functions

01.03.27.0009.01

$$e^{i z} = \cos(z) + i \sin(z)$$

01.03.27.0010.01

$$e^{-i z} = \cos(z) - i \sin(z)$$

01.03.27.0011.01

$$a e^{i z} + b e^{-i z} = (a + b) \cos(z) + (a - b) i \sin(z)$$

Involving hyperbolic functions

01.03.27.0012.01

$$e^{z} = \cosh(z) + \sinh(z)$$

01.03.27.0013.01

$$e^{-z} = \cosh(z) - \sinh(z)$$

01.03.27.0014.01

$$a e^{z} + b e^{-z} = (a + b) \cosh(z) + (a - b) \sinh(z)$$

Involving other related functions

01.03.27.0015.01

$$e^{W_k(z)} W_k(z) = z$$

01.03.27.0016.01

$$e^{W(z)} W(z) = z$$

01.03.27.0017.01

$$e^{n W_k(z)} = z^n W_k(z)^{-n} /; n \in \mathbb{Z}$$

01.03.27.0018.01

$$e^{\alpha W(z)} = z^{\alpha} W(z)^{-\alpha}$$

01.03.27.0019.01

$$e^{a} = z^{a} /; z = e$$

Inequalities

01.03.29.0001.01

$$x + 1 < e^{x} < \frac{1}{1 - x} /; x < 1$$

01.03.29.0002.01

$$\frac{x}{x + 1} < 1 - e^{-x} < x /; x > -1$$

01.03.29.0003.01

$$e^{-\frac{x}{1-x}} < 1 - x < e^{-x} /; x < 1$$

01.03.29.0004.01

$$e^{\frac{x y}{x+y}} < \left(1 + \frac{x}{y}\right)^{y} < e^{x} /; x > 0 \bigwedge y > 0$$

01.03.29.0005.01

$$\frac{|x|}{4} < |e^{x} - 1| < \frac{7 |x|}{4} /; 0 < |x| < 1$$

01.03.29.0006.01

$$|e^{x} - 1| \leq e^{|x|} - 1 \leq |x| e^{|x|}$$

01.03.29.0007.01

$$e^{\frac{x}{x+1}} \leq x + 1 /; x > -1$$

01.03.29.0008.01

$$e^{-x} < \frac{1}{x + 1} /; x > -1$$

01.03.29.0009.01

$$e^{x} \geq x + 1 /; x \in \mathbb{R}$$

01.03.29.0010.01

$$e^{x} > \frac{x^{n}}{n!} + 1 /; n > 0 \land x > 0$$

01.03.29.0011.01

$$e^{-x} < 1 - \frac{x}{2} /; 0 < x \leq 1.5936$$

Theorems

Fourier transformation and Parseval relation

$$\hat{f}(y) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} f(x) e^{i y x} dx \Leftrightarrow f(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} \hat{f}(y) e^{-i y x} dy; \int_{-\infty}^{\infty} f_1(t) f_2(x - t) dt = \int_{-\infty}^{\infty} \hat{f}_1(y) \hat{f}_2(y) e^{-i y x} dy.$$

Laplace transformation and Parseval relation

$$\hat{f}(y) = \int_0^\infty f(x)\, e^{-p x}\, dx \Leftrightarrow f(x) = \frac{1}{2\pi i} \int_{\gamma - i\infty}^{\gamma + i\infty} \hat{f}(p)\, e^{p x}\, dp; \int_{-\infty}^{\infty} f_1(t)\, f_2(x-t)\, dt = \frac{1}{2\pi i} \int_{\gamma - i\infty}^{\gamma + i\infty} \hat{f}_1(p)\, \hat{f}_2(p)\, e^{p x}\, dp.$$

Fourier series (exponential form)

$$f(x) \sim \sum_{k=-\infty}^{\infty} A_k \exp\left(\frac{i \pi k x}{r}\right) /; A_k = \frac{1}{2r} \int_{-r}^{r} f(t) \exp\left(\frac{i \pi k t}{r}\right) dt.$$

The Lindemann-Weierstrass theorem

If the algebraic numbers z_1 , z_2, ... z_n are linearly independent over $\mathbb{Q}$, then the numbers e^{z_1}, e^{z_2}, … e^{z_n} are algebraically independent over $\mathbb{Q}$.

Schanuel's conjecture

If $z_1, z_2, \ldots, z_n \in \mathbb{C}$ are linearly independent over $\mathbb{Q}$, then the transcendence degree of the set of numbers $z_1, z_2, \ldots, z_n, e^{z_1}, e^{z_2}, \ldots, e^{z_n}$ is at least n.

Wigner surmise

The probability density $p(s)$ for a level spacing s of a complicated nucleus is given by $p(s) = \frac{\pi s}{2} \exp\left(-\frac{\pi}{4} s^2\right)$.

The number of surviving atoms in radioactive decay

The number of surviving atoms $N(t)$ at time t in radioactive decay obeys the law $N(t) = N(0) \exp\left(-\frac{t}{\tau}\right)$.

Other information

Sometimes in the literature e^z is defined as the inverse of the logarithmic function; that is $w = e^z$ if and only if $\log(w) = z$.

Sometimes in the literature e^z is defined as the only function $f(z)$ that remains unchanged by differentiation, so that $\frac{d f(z)}{d z} = f(z)$, and also satisfies the property $f(0) = 1$.

History

– R. Cotes (1714) found the formula $e^{i \phi} = \cos(\phi) + i \sin(\phi)$
– L. Euler (1740–1748) found a series expansion for e^z
– Cayley (around 1880) used the notation "exp"

The function exp is encountered often in mathematics and the natural sciences.

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