Mathematica 11.3 Integration Test Results

Test results for the 774 problems in "2.3 Exponential functions.m"

Problem 16: Unable to integrate problem.

$$\int \left(F^{e\,(c+d\,x)}\right)^n \left(a+b\left(F^{e\,(c+d\,x)}\right)^n\right)^p \, dx$$

Optimal (type 3, 41 leaves, 2 steps):

$$\frac{\left(a+b\left(F^{e\,(c+d\,x)}\right)^n\right)^{1+p}}{b\,d\,e\,n\,(1+p)\,\text{Log}[F]}$$

Result (type 8, 31 leaves):

$$\int \left(F^{e\,(c+d\,x)}\right)^n \left(a+b\left(F^{e\,(c+d\,x)}\right)^n\right)^p \, dx$$

Problem 17: Unable to integrate problem.

$$\int \left(a+b\left(F^{e\,(c+d\,x)}\right)^n\right)^p \left(G^{h\,(f+g\,x)}\right)^{\frac{d\,e\,n\,\text{Log}[F]}{g\,h\,\text{Log}[G]}} \, dx$$

Optimal (type 3, 80 leaves, 3 steps):

$$\frac{\left(F^{e\,(c+d\,x)}\right)^{-n}\left(a+b\left(F^{e\,(c+d\,x)}\right)^n\right)^{1+p}\left(G^{h\,(f+g\,x)}\right)^{\frac{d\,e\,n\,\text{Log}[F]}{g\,h\,\text{Log}[G]}}}{b\,d\,e\,n\,(1+p)\,\text{Log}[F]}$$

Result (type 8, 46 leaves):

$$\int \left(a+b\left(F^{e\,(c+d\,x)}\right)^n\right)^p \left(G^{h\,(f+g\,x)}\right)^{\frac{d\,e\,n\,\text{Log}[F]}{g\,h\,\text{Log}[G]}} \, dx$$

Problem 39: Result more than twice size of optimal antiderivative.

$$\int \frac{e^x}{1-e^{2x}} \, dx$$

Optimal (type 3, 4 leaves, 2 steps):

$$\text{ArcTanh}\left[e^x\right]$$

Result (type 3, 23 leaves):

$$-\frac{1}{2}\,\text{Log}\left[1-e^x\right]+\frac{1}{2}\,\text{Log}\left[1+e^x\right]$$

Problem 80: Result more than twice size of optimal antiderivative.

$$\int \frac{f^{a+b x^2}}{x^9} \, dx$$

Optimal (type 4, 24 leaves, 1 step):

$$-\frac{1}{2} b^4 f^a \text{Gamma}\left[-4, -b x^2 \text{Log}[f]\right] \text{Log}[f]^4$$

Result (type 4, 71 leaves):

$$\frac{1}{48 x^8} f^a \left(b^4 x^8 \text{ExpIntegralEi}\left[b x^2 \text{Log}[f]\right] \text{Log}[f]^4 - f^{b x^2} \left(6 + 2 b x^2 \text{Log}[f] + b^2 x^4 \text{Log}[f]^2 + b^3 x^6 \text{Log}[f]^3\right)\right)$$

Problem 81: Result more than twice size of optimal antiderivative.

$$\int \frac{f^{a+b x^2}}{x^{11}} \, dx$$

Optimal (type 4, 24 leaves, 1 step):

$$\frac{1}{2} b^5 f^a \text{Gamma}\left[-5, -b x^2 \text{Log}[f]\right] \text{Log}[f]^5$$

Result (type 4, 83 leaves):

$$\frac{1}{240 x^{10}} f^a \left(b^5 x^{10} \text{ExpIntegralEi}\left[b x^2 \text{Log}[f]\right] \text{Log}[f]^5 - f^{b x^2} \left(24 + 6 b x^2 \text{Log}[f] + 2 b^2 x^4 \text{Log}[f]^2 + b^3 x^6 \text{Log}[f]^3 + b^4 x^8 \text{Log}[f]^4\right)\right)$$

Problem 82: Result more than twice size of optimal antiderivative.

$$\int f^{a+b x^2} x^{12} \, dx$$

Optimal (type 4, 34 leaves, 1 step):

$$-\frac{f^a x^{13} \text{Gamma}\left[\frac{13}{2}, -b x^2 \text{Log}[f]\right]}{2 \left(-b x^2 \text{Log}[f]\right)^{13/2}}$$

Result (type 4, 119 leaves):

$$\left(f^a \left(10395 \sqrt{\pi} \text{ Erfi}\left[\sqrt{b} \ x \sqrt{\text{Log}[f]}\right] + 2 \sqrt{b} \ f^{b x^2} x \sqrt{\text{Log}[f]} \left(-10395 + 6930 b x^2 \text{Log}[f] - 2772 b^2 x^4 \text{Log}[f]^2 + 792 b^3 x^6 \text{Log}[f]^3 - 176 b^4 x^8 \text{Log}[f]^4 + 32 b^5 x^{10} \text{Log}[f]^5\right)\right)\right) \Big/ \left(128 b^{13/2} \text{Log}[f]^{13/2}\right)$$

Problem 83: Result more than twice size of optimal antiderivative.

$$\int f^{a+b x^2} x^{10} \, dx$$

Optimal (type 4, 34 leaves, 1 step):

$$-\frac{f^a x^{11} \text{Gamma}\left[\frac{11}{2}, -b x^2 \text{Log}[f]\right]}{2 \left(-b x^2 \text{Log}[f]\right)^{11/2}}$$

Result (type 4, 107 leaves):

$$\left(f^a \left(-945 \sqrt{\pi} \, \text{Erfi}\left[\sqrt{b} \, x \sqrt{\text{Log}[f]}\right] + 2 \sqrt{b} \, f^{b x^2} x \sqrt{\text{Log}[f]} \left(945 - 630 b x^2 \text{Log}[f] + 252 b^2 x^4 \text{Log}[f]^2 - 72 b^3 x^6 \text{Log}[f]^3 + 16 b^4 x^8 \text{Log}[f]^4\right)\right)\right) \Big/ \left(64 b^{11/2} \text{Log}[f]^{11/2}\right)$$

Problem 93: Result more than twice size of optimal antiderivative.

$$\int \frac{f^{a+b x^2}}{x^{10}} \, dx$$

Optimal (type 4, 34 leaves, 1 step):

$$-\frac{f^a \text{Gamma}\left[-\frac{9}{2}, -b x^2 \text{Log}[f]\right] \left(-b x^2 \text{Log}[f]\right)^{9/2}}{2 x^9}$$

Result (type 4, 101 leaves):

$$\frac{1}{945 x^9} f^a \left(16 b^{9/2} \sqrt{\pi} \, x^9 \, \text{Erfi}\left[\sqrt{b} \, x \sqrt{\text{Log}[f]}\right] \text{Log}[f]^{9/2} - f^{b x^2} \left(105 + 30 b x^2 \text{Log}[f] + 12 b^2 x^4 \text{Log}[f]^2 + 8 b^3 x^6 \text{Log}[f]^3 + 16 b^4 x^8 \text{Log}[f]^4\right)\right)$$

Problem 94: Result more than twice size of optimal antiderivative.

$$\int \frac{f^{a+b x^2}}{x^{12}} \, dx$$

Optimal (type 4, 34 leaves, 1 step):

$$-\frac{f^a \text{Gamma}\left[-\frac{11}{2}, -b x^2 \text{Log}[f]\right] \left(-b x^2 \text{Log}[f]\right)^{11/2}}{2 x^{11}}$$

Result (type 4, 113 leaves):

$$\frac{1}{10395 x^{11}} f^a \left(32 b^{11/2} \sqrt{\pi} \, x^{11} \, \text{Erfi}\left[\sqrt{b} \, x \sqrt{\text{Log}[f]}\right] \text{Log}[f]^{11/2} - f^{b x^2} \left(945 + 210 b x^2 \text{Log}[f] + 60 b^2 x^4 \text{Log}[f]^2 + 24 b^3 x^6 \text{Log}[f]^3 + 16 b^4 x^8 \text{Log}[f]^4 + 32 b^5 x^{10} \text{Log}[f]^5\right)\right)$$

Problem 106: Result more than twice size of optimal antiderivative.

$$\int \frac{f^{a+b x^3}}{x^{13}} \, dx$$

Optimal (type 4, 24 leaves, 1 step):

$$-\frac{1}{3} b^4 f^a \text{Gamma}\left[-4, -b x^3 \text{Log}[f]\right] \text{Log}[f]^4$$

Result (type 4, 71 leaves):

$$\frac{1}{72 x^{12}} f^a \left(b^4 x^{12} \text{ExpIntegralEi}\left[b x^3 \text{Log}[f]\right] \text{Log}[f]^4 - f^{b x^3} \left(6 + 2 b x^3 \text{Log}[f] + b^2 x^6 \text{Log}[f]^2 + b^3 x^9 \text{Log}[f]^3\right)\right)$$

Problem 107: Result more than twice size of optimal antiderivative.

$$\int \frac{f^{a+b x^3}}{x^{16}} \, dx$$

Optimal (type 4, 24 leaves, 1 step):

$$\frac{1}{3} b^5 f^a \text{Gamma}\left[-5, -b x^3 \text{Log}[f]\right] \text{Log}[f]^5$$

Result (type 4, 83 leaves):

$$\frac{1}{360 x^{15}} f^a \left(b^5 x^{15} \text{ExpIntegralEi}\left[b x^3 \text{Log}[f]\right] \text{Log}[f]^5 - f^{b x^3} \left(24 + 6 b x^3 \text{Log}[f] + 2 b^2 x^6 \text{Log}[f]^2 + b^3 x^9 \text{Log}[f]^3 + b^4 x^{12} \text{Log}[f]^4\right)\right)$$

Problem 116: Result more than twice size of optimal antiderivative.

$$\int f^{a+\frac{b}{x}} x^4 \, dx$$

Optimal (type 4, 22 leaves, 1 step):

$$-b^5 f^a \text{Gamma}\left[-5, -\frac{b \text{Log}[f]}{x}\right] \text{Log}[f]^5$$

Result (type 4, 77 leaves):

$$\frac{1}{120} f^a \left(-b^5 \text{ExpIntegralEi}\left[\frac{b \text{Log}[f]}{x}\right] \text{Log}[f]^5 + f^{b/x} x \left(24 x^4 + 6 b x^3 \text{Log}[f] + 2 b^2 x^2 \text{Log}[f]^2 + b^3 x \text{Log}[f]^3 + b^4 \text{Log}[f]^4\right)\right)$$

Problem 117: Result more than twice size of optimal antiderivative.

$$\int f^{a+\frac{b}{x}}\, x^3\, dx$$

Optimal (type 4, 21 leaves, 1 step):

$$b^4 f^a \text{Gamma}\left[-4, -\frac{b \text{Log}[f]}{x}\right] \text{Log}[f]^4$$

Result (type 4, 65 leaves):

$$\frac{1}{24} f^a \left(-b^4 \text{ExpIntegralEi}\left[\frac{b \text{Log}[f]}{x}\right] \text{Log}[f]^4 + f^{b/x}\, x \left(6 x^3 + 2 b x^2 \text{Log}[f] + b^2 x \text{Log}[f]^2 + b^3 \text{Log}[f]^3\right)\right)$$

Problem 129: Result more than twice size of optimal antiderivative.

$$\int f^{a+\frac{b}{x^2}}\, x^9\, dx$$

Optimal (type 4, 24 leaves, 1 step):

$$-\frac{1}{2} b^5 f^a \text{Gamma}\left[-5, -\frac{b \text{Log}[f]}{x^2}\right] \text{Log}[f]^5$$

Result (type 4, 81 leaves):

$$\frac{1}{240} f^a \left(-b^5 \text{ExpIntegralEi}\left[\frac{b \text{Log}[f]}{x^2}\right] \text{Log}[f]^5 + f^{\frac{b}{x^2}}\, x^2 \left(24 x^8 + 6 b x^6 \text{Log}[f] + 2 b^2 x^4 \text{Log}[f]^2 + b^3 x^2 \text{Log}[f]^3 + b^4 \text{Log}[f]^4\right)\right)$$

Problem 130: Result more than twice size of optimal antiderivative.

$$\int f^{a+\frac{b}{x^2}}\, x^7\, dx$$

Optimal (type 4, 24 leaves, 1 step):

$$\frac{1}{2} b^4 f^a \text{Gamma}\left[-4, -\frac{b \text{Log}[f]}{x^2}\right] \text{Log}[f]^4$$

Result (type 4, 69 leaves):

$$\frac{1}{48} f^a \left(-b^4 \text{ExpIntegralEi}\left[\frac{b \text{Log}[f]}{x^2}\right] \text{Log}[f]^4 + f^{\frac{b}{x^2}}\, x^2 \left(6 x^6 + 2 b x^4 \text{Log}[f] + b^2 x^2 \text{Log}[f]^2 + b^3 \text{Log}[f]^3\right)\right)$$

Problem 141: Result more than twice size of optimal antiderivative.

$$\int f^{a+\frac{b}{x^2}} x^{10} \, dx$$

Optimal (type 4, 34 leaves, 1 step):

$$\frac{1}{2} f^a x^{11} \text{Gamma}\left[-\frac{11}{2}, -\frac{b \text{Log}[f]}{x^2}\right] \left(-\frac{b \text{Log}[f]}{x^2}\right)^{11/2}$$

Result (type 4, 110 leaves):

$$\frac{1}{10395} f^a \left(-32 b^{11/2} \sqrt{\pi} \text{ Erfi}\left[\frac{\sqrt{b} \sqrt{\text{Log}[f]}}{x}\right] \text{Log}[f]^{11/2} + f^{\frac{b}{x^2}} x \left(945 x^{10} + 210 b x^8 \text{Log}[f] + 60 b^2 x^6 \text{Log}[f]^2 + 24 b^3 x^4 \text{Log}[f]^3 + 16 b^4 x^2 \text{Log}[f]^4 + 32 b^5 \text{Log}[f]^5\right)\right)$$

Problem 142: Result more than twice size of optimal antiderivative.

$$\int f^{a+\frac{b}{x^2}} x^8 \, dx$$

Optimal (type 4, 34 leaves, 1 step):

$$\frac{1}{2} f^a x^9 \text{Gamma}\left[-\frac{9}{2}, -\frac{b \text{Log}[f]}{x^2}\right] \left(-\frac{b \text{Log}[f]}{x^2}\right)^{9/2}$$

Result (type 4, 98 leaves):

$$\frac{1}{945} f^a \left(-16 b^{9/2} \sqrt{\pi} \text{ Erfi}\left[\frac{\sqrt{b} \sqrt{\text{Log}[f]}}{x}\right] \text{Log}[f]^{9/2} + f^{\frac{b}{x^2}} x \left(105 x^8 + 30 b x^6 \text{Log}[f] + 12 b^2 x^4 \text{Log}[f]^2 + 8 b^3 x^2 \text{Log}[f]^3 + 16 b^4 \text{Log}[f]^4\right)\right)$$

Problem 152: Result more than twice size of optimal antiderivative.

$$\int \frac{f^{a+\frac{b}{x^2}}}{x^{12}} \, dx$$

Optimal (type 4, 34 leaves, 1 step):

$$\frac{f^a \text{Gamma}\left[\frac{11}{2}, -\frac{b \text{Log}[f]}{x^2}\right]}{2 x^{11} \left(-\frac{b \text{Log}[f]}{x^2}\right)^{11/2}}$$

Result (type 4, 112 leaves):

$$\left(f^a \left(945 \sqrt{\pi}\ \text{Erfi}\left[\frac{\sqrt{b}\ \sqrt{\text{Log}[f]}}{x}\right] - \frac{1}{x^9} 2 \sqrt{b}\ f^{\frac{b}{x^2}} \sqrt{\text{Log}[f]}\ \left(945\, x^8 - 630\, b\, x^6\, \text{Log}[f] + 252\, b^2\, x^4\, \text{Log}[f]^2 - 72\, b^3\, x^2\, \text{Log}[f]^3 + 16\, b^4\, \text{Log}[f]^4\right)\right)\right) \Big/ \left(64\, b^{11/2}\, \text{Log}[f]^{11/2}\right)$$

Problem 153: Result more than twice size of optimal antiderivative.

$$\int \frac{f^{a+\frac{b}{x^2}}}{x^{14}}\, dx$$

Optimal (type 4, 34 leaves, 1 step):

$$\frac{f^a\, \text{Gamma}\left[\frac{13}{2}, -\frac{b\, \text{Log}[f]}{x^2}\right]}{2\, x^{13} \left(-\frac{b\, \text{Log}[f]}{x^2}\right)^{13/2}}$$

Result (type 4, 124 leaves):

$$\left(f^a \left(-10395 \sqrt{\pi}\ \text{Erfi}\left[\frac{\sqrt{b}\ \sqrt{\text{Log}[f]}}{x}\right] + \frac{1}{x^{11}} 2 \sqrt{b}\ f^{\frac{b}{x^2}} \sqrt{\text{Log}[f]}\ \left(10395\, x^{10} - 6930\, b\, x^8\, \text{Log}[f] + 2772\, b^2\, x^6\, \text{Log}[f]^2 - 792\, b^3\, x^4\, \text{Log}[f]^3 + 176\, b^4\, x^2\, \text{Log}[f]^4 - 32\, b^5\, \text{Log}[f]^5\right)\right)\right) \Big/ \left(128\, b^{13/2}\, \text{Log}[f]^{13/2}\right)$$

Problem 155: Result more than twice size of optimal antiderivative.

$$\int f^{a+\frac{b}{x^3}}\, x^{14}\, dx$$

Optimal (type 4, 24 leaves, 1 step):

$$-\frac{1}{3} b^5\, f^a\, \text{Gamma}\left[-5, -\frac{b\, \text{Log}[f]}{x^3}\right] \text{Log}[f]^5$$

Result (type 4, 81 leaves):

$$\frac{1}{360} f^a \left(-b^5\, \text{ExpIntegralEi}\left[\frac{b\, \text{Log}[f]}{x^3}\right] \text{Log}[f]^5 + f^{\frac{b}{x^3}}\, x^3 \left(24\, x^{12} + 6\, b\, x^9\, \text{Log}[f] + 2\, b^2\, x^6\, \text{Log}[f]^2 + b^3\, x^3\, \text{Log}[f]^3 + b^4\, \text{Log}[f]^4\right)\right)$$

Problem 156: Result more than twice size of optimal antiderivative.

$$\int f^{a+\frac{b}{x^3}}\, x^{11}\, dx$$

Optimal (type 4, 24 leaves, 1 step):

$$\frac{1}{3} b^4\, f^a\, \text{Gamma}\left[-4, -\frac{b\, \text{Log}[f]}{x^3}\right] \text{Log}[f]^4$$

Result (type 4, 69 leaves):

$$\frac{1}{72} f^a \left(-b^4 \text{ExpIntegralEi}\left[\frac{b \text{Log}[f]}{x^3}\right] \text{Log}[f]^4 + f^{\frac{b}{x^3}} x^3 \left(6 x^9 + 2 b x^6 \text{Log}[f] + b^2 x^3 \text{Log}[f]^2 + b^3 \text{Log}[f]^3\right)\right)$$

Problem 202: Unable to integrate problem.

$$\int f^{c (a+b x)^3} x^2 \, dx$$

Optimal (type 4, 120 leaves, 5 steps):

$$\frac{f^{c (a+b x)^3}}{3 b^3 c \text{Log}[f]} + \frac{2 a (a+b x)^2 \text{Gamma}\left[\frac{2}{3}, -c (a+b x)^3 \text{Log}[f]\right]}{3 b^3 \left(-c (a+b x)^3 \text{Log}[f]\right)^{2/3}} - \frac{a^2 (a+b x) \text{Gamma}\left[\frac{1}{3}, -c (a+b x)^3 \text{Log}[f]\right]}{3 b^3 \left(-c (a+b x)^3 \text{Log}[f]\right)^{1/3}}$$

Result (type 8, 17 leaves):

$$\int f^{c (a+b x)^3} x^2 \, dx$$

Problem 203: Unable to integrate problem.

$$\int f^{c (a+b x)^3} x \, dx$$

Optimal (type 4, 92 leaves, 4 steps):

$$-\frac{(a+b x)^2 \text{Gamma}\left[\frac{2}{3}, -c (a+b x)^3 \text{Log}[f]\right]}{3 b^2 \left(-c (a+b x)^3 \text{Log}[f]\right)^{2/3}} + \frac{a (a+b x) \text{Gamma}\left[\frac{1}{3}, -c (a+b x)^3 \text{Log}[f]\right]}{3 b^2 \left(-c (a+b x)^3 \text{Log}[f]\right)^{1/3}}$$

Result (type 8, 15 leaves):

$$\int f^{c (a+b x)^3} x \, dx$$

Problem 208: Unable to integrate problem.

$$\int e^{a^3+3 a^2 b x+3 a b^2 x^2+b^3 x^3} x^4 \, dx$$

Optimal (type 4, 183 leaves, 8 steps):

$$\frac{2 a^2 e^{(a+b x)^3}}{b^5}-\frac{a^4 (a+b x) \text{Gamma}\left[\frac{1}{3},-(a+b x)^3\right]}{3 b^5 \left(-(a+b x)^3\right)^{1/3}}+\frac{4 a^3 (a+b x)^2 \text{Gamma}\left[\frac{2}{3},-(a+b x)^3\right]}{3 b^5 \left(-(a+b x)^3\right)^{2/3}}+\frac{4 a (a+b x)^4 \text{Gamma}\left[\frac{4}{3},-(a+b x)^3\right]}{3 b^5 \left(-(a+b x)^3\right)^{4/3}}-\frac{(a+b x)^5 \text{Gamma}\left[\frac{5}{3},-(a+b x)^3\right]}{3 b^5 \left(-(a+b x)^3\right)^{5/3}}$$

Result (type 8, 35 leaves):

$$\int e^{a^3+3 a^2 b x+3 a b^2 x^2+b^3 x^3} x^4 \, dx$$

Problem 209: Unable to integrate problem.

$$\int e^{a^3+3 a^2 b x+3 a b^2 x^2+b^3 x^3} x^3 \, dx$$

Optimal (type 4, 138 leaves, 7 steps):

$$-\frac{a e^{(a+b x)^3}}{b^4}+\frac{a^3 (a+b x) \text{Gamma}\left[\frac{1}{3},-(a+b x)^3\right]}{3 b^4 \left(-(a+b x)^3\right)^{1/3}}-\frac{a^2 (a+b x)^2 \text{Gamma}\left[\frac{2}{3},-(a+b x)^3\right]}{b^4 \left(-(a+b x)^3\right)^{2/3}}-\frac{(a+b x)^4 \text{Gamma}\left[\frac{4}{3},-(a+b x)^3\right]}{3 b^4 \left(-(a+b x)^3\right)^{4/3}}$$

Result (type 8, 35 leaves):

$$\int e^{a^3+3 a^2 b x+3 a b^2 x^2+b^3 x^3} x^3 \, dx$$

Problem 210: Unable to integrate problem.

$$\int e^{a^3+3 a^2 b x+3 a b^2 x^2+b^3 x^3} x^2 \, dx$$

Optimal (type 4, 99 leaves, 6 steps):

$$\frac{e^{(a+b x)^3}}{3 b^3}-\frac{a^2 (a+b x) \text{Gamma}\left[\frac{1}{3},-(a+b x)^3\right]}{3 b^3 \left(-(a+b x)^3\right)^{1/3}}+\frac{2 a (a+b x)^2 \text{Gamma}\left[\frac{2}{3},-(a+b x)^3\right]}{3 b^3 \left(-(a+b x)^3\right)^{2/3}}$$

Result (type 8, 35 leaves):

$$\int e^{a^3+3 a^2 b x+3 a b^2 x^2+b^3 x^3} x^2 \, dx$$

Problem 211: Unable to integrate problem.

$$\int e^{a^3+3 a^2 b x+3 a b^2 x^2+b^3 x^3} x \, dx$$

Optimal (type 4, 80 leaves, 5 steps):

$$\frac{a\,(a+b\,x)\,\text{Gamma}\left[\frac{1}{3},\,-(a+b\,x)^3\right]}{3\,b^2\,\left(-(a+b\,x)^3\right)^{1/3}}-\frac{(a+b\,x)^2\,\text{Gamma}\left[\frac{2}{3},\,-(a+b\,x)^3\right]}{3\,b^2\,\left(-(a+b\,x)^3\right)^{2/3}}$$

Result (type 8, 33 leaves):

$$\int e^{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}\,x\,dx$$

Problem 247: Unable to integrate problem.

$$\int f^{c\,(a+b\,x)^n}\,x^3\,dx$$

Optimal (type 4, 207 leaves, 6 steps):

$$-\frac{(a+b\,x)^4\,\text{Gamma}\left[\frac{4}{n},\,-c\,(a+b\,x)^n\,\text{Log}[f]\right]\,\left(-c\,(a+b\,x)^n\,\text{Log}[f]\right)^{-4/n}}{b^4\,n}+$$
$$\frac{1}{b^4\,n}3\,a\,(a+b\,x)^3\,\text{Gamma}\left[\frac{3}{n},\,-c\,(a+b\,x)^n\,\text{Log}[f]\right]\,\left(-c\,(a+b\,x)^n\,\text{Log}[f]\right)^{-3/n}-$$
$$\frac{1}{b^4\,n}3\,a^2\,(a+b\,x)^2\,\text{Gamma}\left[\frac{2}{n},\,-c\,(a+b\,x)^n\,\text{Log}[f]\right]\,\left(-c\,(a+b\,x)^n\,\text{Log}[f]\right)^{-2/n}+$$
$$\frac{a^3\,(a+b\,x)\,\text{Gamma}\left[\frac{1}{n},\,-c\,(a+b\,x)^n\,\text{Log}[f]\right]\,\left(-c\,(a+b\,x)^n\,\text{Log}[f]\right)^{-1/n}}{b^4\,n}$$

Result (type 8, 17 leaves):

$$\int f^{c\,(a+b\,x)^n}\,x^3\,dx$$

Problem 248: Unable to integrate problem.

$$\int f^{c\,(a+b\,x)^n}\,x^2\,dx$$

Optimal (type 4, 154 leaves, 5 steps):

$$-\frac{(a+b\,x)^3\,\text{Gamma}\left[\frac{3}{n},\,-c\,(a+b\,x)^n\,\text{Log}[f]\right]\,\left(-c\,(a+b\,x)^n\,\text{Log}[f]\right)^{-3/n}}{b^3\,n}+$$
$$\frac{1}{b^3\,n}2\,a\,(a+b\,x)^2\,\text{Gamma}\left[\frac{2}{n},\,-c\,(a+b\,x)^n\,\text{Log}[f]\right]\,\left(-c\,(a+b\,x)^n\,\text{Log}[f]\right)^{-2/n}-$$
$$\frac{a^2\,(a+b\,x)\,\text{Gamma}\left[\frac{1}{n},\,-c\,(a+b\,x)^n\,\text{Log}[f]\right]\,\left(-c\,(a+b\,x)^n\,\text{Log}[f]\right)^{-1/n}}{b^3\,n}$$

Result (type 8, 17 leaves):

$$\int f^{c\,(a+b\,x)^n}\,x^2\,dx$$

Problem 265: Result more than twice size of optimal antiderivative.

$$\int \frac{F^{a+b (c+d x)^2}}{(c+d x)^9} \, dx$$

Optimal (type 4, 31 leaves, 1 step):

$$-\frac{b^4 F^a \text{Gamma}\left[-4, -b (c+d x)^2 \text{Log}[F]\right] \text{Log}[F]^4}{2 d}$$

Result (type 4, 95 leaves):

$$\frac{1}{48 d} F^a \left(b^4 \text{ExpIntegralEi}\left[b (c+d x)^2 \text{Log}[F]\right] \text{Log}[F]^4 - \frac{1}{(c+d x)^8} F^{b (c+d x)^2} \left(6 + 2 b (c+d x)^2 \text{Log}[F] + b^2 (c+d x)^4 \text{Log}[F]^2 + b^3 (c+d x)^6 \text{Log}[F]^3\right)\right)$$

Problem 266: Result more than twice size of optimal antiderivative.

$$\int \frac{F^{a+b (c+d x)^2}}{(c+d x)^{11}} \, dx$$

Optimal (type 4, 31 leaves, 1 step):

$$\frac{b^5 F^a \text{Gamma}\left[-5, -b (c+d x)^2 \text{Log}[F]\right] \text{Log}[F]^5}{2 d}$$

Result (type 4, 111 leaves):

$$\frac{1}{240 d} F^a \left(b^5 \text{ExpIntegralEi}\left[b (c+d x)^2 \text{Log}[F]\right] \text{Log}[F]^5 - \frac{1}{(c+d x)^{10}} F^{b (c+d x)^2} \left(24 + 6 b (c+d x)^2 \text{Log}[F] + 2 b^2 (c+d x)^4 \text{Log}[F]^2 + b^3 (c+d x)^6 \text{Log}[F]^3 + b^4 (c+d x)^8 \text{Log}[F]^4\right)\right)$$

Problem 267: Result more than twice size of optimal antiderivative.

$$\int F^{a+b (c+d x)^2} (c+d x)^{12} \, dx$$

Optimal (type 4, 49 leaves, 1 step):

$$-\frac{F^a (c+d x)^{13} \text{Gamma}\left[\frac{13}{2}, -b (c+d x)^2 \text{Log}[F]\right]}{2 d \left(-b (c+d x)^2 \text{Log}[F]\right)^{13/2}}$$

Result (type 4, 155 leaves):

$$\left(F^a \left(10395\sqrt{\pi}\,\text{Erfi}\left[\sqrt{b}\,(c+d\,x)\,\sqrt{\text{Log}[F]}\right] - 2\sqrt{b}\,F^{b\,(c+d\,x)^2}\,\sqrt{\text{Log}[F]}\,\left(10395\,(c+d\,x) - 6930\,b\,(c+d\,x)^3\,\text{Log}[F] + 2772\,b^2\,(c+d\,x)^5\,\text{Log}[F]^2 - 792\,b^3\,(c+d\,x)^7\,\text{Log}[F]^3 + 176\,b^4\,(c+d\,x)^9\,\text{Log}[F]^4 - 32\,b^5\,(c+d\,x)^{11}\,\text{Log}[F]^5\right)\right)\right) \Big/ \left(128\,b^{13/2}\,d\,\text{Log}[F]^{13/2}\right)$$

Problem 268: Result more than twice size of optimal antiderivative.

$$\int F^{a+b\,(c+d\,x)^2}\,(c+d\,x)^{10}\,dx$$

Optimal (type 4, 49 leaves, 1 step):

$$-\frac{F^a\,(c+d\,x)^{11}\,\text{Gamma}\left[\frac{11}{2},\,-b\,(c+d\,x)^2\,\text{Log}[F]\right]}{2\,d\,\left(-b\,(c+d\,x)^2\,\text{Log}[F]\right)^{11/2}}$$

Result (type 4, 139 leaves):

$$\left(F^a \left(-945\sqrt{\pi}\,\text{Erfi}\left[\sqrt{b}\,(c+d\,x)\,\sqrt{\text{Log}[F]}\right] + 2\sqrt{b}\,F^{b\,(c+d\,x)^2}\,\sqrt{\text{Log}[F]}\,\left(945\,(c+d\,x) - 630\,b\,(c+d\,x)^3\,\text{Log}[F] + 252\,b^2\,(c+d\,x)^5\,\text{Log}[F]^2 - 72\,b^3\,(c+d\,x)^7\,\text{Log}[F]^3 + 16\,b^4\,(c+d\,x)^9\,\text{Log}[F]^4\right)\right)\right) \Big/ \left(64\,b^{11/2}\,d\,\text{Log}[F]^{11/2}\right)$$

Problem 278: Result more than twice size of optimal antiderivative.

$$\int \frac{F^{a+b\,(c+d\,x)^2}}{(c+d\,x)^{10}}\,dx$$

Optimal (type 4, 49 leaves, 1 step):

$$-\frac{F^a\,\text{Gamma}\left[-\frac{9}{2},\,-b\,(c+d\,x)^2\,\text{Log}[F]\right]\,\left(-b\,(c+d\,x)^2\,\text{Log}[F]\right)^{9/2}}{2\,d\,(c+d\,x)^9}$$

Result (type 4, 129 leaves):

$$\frac{1}{945\,d} F^a \left(16\,b^{9/2}\sqrt{\pi}\,\text{Erfi}\left[\sqrt{b}\,(c+d\,x)\,\sqrt{\text{Log}[F]}\right]\,\text{Log}[F]^{9/2} - \frac{1}{(c+d\,x)^9} F^{b\,(c+d\,x)^2}\,\left(105 + 30\,b\,(c+d\,x)^2\,\text{Log}[F] + 12\,b^2\,(c+d\,x)^4\,\text{Log}[F]^2 + 8\,b^3\,(c+d\,x)^6\,\text{Log}[F]^3 + 16\,b^4\,(c+d\,x)^8\,\text{Log}[F]^4\right)\right)$$

Problem 279: Result more than twice size of optimal antiderivative.

$$\int \frac{F^{a+b\,(c+d\,x)^2}}{(c+d\,x)^{12}}\,dx$$

Optimal (type 4, 49 leaves, 1 step):

$$-\frac{F^a \text{Gamma}\left[-\frac{11}{2}, -b (c+d x)^2 \text{Log}[F]\right] \left(-b (c+d x)^2 \text{Log}[F]\right)^{11/2}}{2 d (c+d x)^{11}}$$

Result (type 4, 152 leaves):

$$\left(F^a \left(32 b^{11/2} \sqrt{\pi} (c+d x)^{11} \text{Erfi}\left[\sqrt{b} (c+d x) \sqrt{\text{Log}[F]}\right] \text{Log}[F]^{11/2} - F^{b (c+d x)^2} \left(945 + 210 b (c+d x)^2 \text{Log}[F] + 60 b^2 (c+d x)^4 \text{Log}[F]^2 + 24 b^3 (c+d x)^6 \text{Log}[F]^3 + 16 b^4 (c+d x)^8 \text{Log}[F]^4 + 32 b^5 (c+d x)^{10} \text{Log}[F]^5\right)\right)\right) \Big/ \left(10395 d (c+d x)^{11}\right)$$

Problem 291: Result more than twice size of optimal antiderivative.

$$\int \frac{F^{a+b (c+d x)^3}}{(c+d x)^{13}} \, dx$$

Optimal (type 4, 31 leaves, 1 step):

$$-\frac{b^4 F^a \text{Gamma}\left[-4, -b (c+d x)^3 \text{Log}[F]\right] \text{Log}[F]^4}{3 d}$$

Result (type 4, 95 leaves):

$$\frac{1}{72 d} F^a \left(b^4 \text{ExpIntegralEi}\left[b (c+d x)^3 \text{Log}[F]\right] \text{Log}[F]^4 - \frac{1}{(c+d x)^{12}} F^{b (c+d x)^3} \left(6 + 2 b (c+d x)^3 \text{Log}[F] + b^2 (c+d x)^6 \text{Log}[F]^2 + b^3 (c+d x)^9 \text{Log}[F]^3\right)\right)$$

Problem 292: Result more than twice size of optimal antiderivative.

$$\int \frac{F^{a+b (c+d x)^3}}{(c+d x)^{16}} \, dx$$

Optimal (type 4, 31 leaves, 1 step):

$$\frac{b^5 F^a \text{Gamma}\left[-5, -b (c+d x)^3 \text{Log}[F]\right] \text{Log}[F]^5}{3 d}$$

Result (type 4, 111 leaves):

$$\frac{1}{360 d} F^a \left(b^5 \text{ExpIntegralEi}\left[b (c+d x)^3 \text{Log}[F]\right] \text{Log}[F]^5 - \frac{1}{(c+d x)^{15}} F^{b (c+d x)^3} \left(24 + 6 b (c+d x)^3 \text{Log}[F] + 2 b^2 (c+d x)^6 \text{Log}[F]^2 + b^3 (c+d x)^9 \text{Log}[F]^3 + b^4 (c+d x)^{12} \text{Log}[F]^4\right)\right)$$

Problem 302: Result more than twice size of optimal antiderivative.

$$\int F^{a+\frac{b}{c+d x}} (c+d x)^4 \, dx$$

Optimal (type 4, 29 leaves, 1 step):

$$-\frac{b^5 F^a \text{Gamma}\left[-5, -\frac{b \text{Log}[F]}{c+d x}\right] \text{Log}[F]^5}{d}$$

Result (type 4, 108 leaves):

$$\frac{1}{120 d} F^a \left(-b^5 \text{ExpIntegralEi}\left[\frac{b \text{Log}[F]}{c+d x}\right] \text{Log}[F]^5 + F^{\frac{b}{c+d x}} (c+d x) \left(24 (c+d x)^4 + 6 b (c+d x)^3 \text{Log}[F] + 2 b^2 (c+d x)^2 \text{Log}[F]^2 + b^3 (c+d x) \text{Log}[F]^3 + b^4 \text{Log}[F]^4\right)\right)$$

Problem 303: Result more than twice size of optimal antiderivative.

$$\int F^{a+\frac{b}{c+d x}} (c+d x)^3 \, dx$$

Optimal (type 4, 28 leaves, 1 step):

$$\frac{b^4 F^a \text{Gamma}\left[-4, -\frac{b \text{Log}[F]}{c+d x}\right] \text{Log}[F]^4}{d}$$

Result (type 4, 92 leaves):

$$\frac{1}{24 d} F^a \left(-b^4 \text{ExpIntegralEi}\left[\frac{b \text{Log}[F]}{c+d x}\right] \text{Log}[F]^4 + F^{\frac{b}{c+d x}} (c+d x) \left(6 (c+d x)^3 + 2 b (c+d x)^2 \text{Log}[F] + b^2 (c+d x) \text{Log}[F]^2 + b^3 \text{Log}[F]^3\right)\right)$$

Problem 315: Result more than twice size of optimal antiderivative.

$$\int F^{a+\frac{b}{(c+d x)^2}} (c+d x)^9 \, dx$$

Optimal (type 4, 31 leaves, 1 step):

$$-\frac{b^5 F^a \text{Gamma}\left[-5, -\frac{b \text{Log}[F]}{(c+d x)^2}\right] \text{Log}[F]^5}{2 d}$$

Result (type 4, 112 leaves):

$$\frac{1}{240\, d} F^a \left(-b^5 \text{ExpIntegralEi}\left[\frac{b \text{Log}[F]}{(c+d x)^2}\right] \text{Log}[F]^5 + F^{\frac{b}{(c+d x)^2}} (c+d x)^2 \left(24 (c+d x)^8 + 6 b (c+d x)^6 \text{Log}[F] + 2 b^2 (c+d x)^4 \text{Log}[F]^2 + b^3 (c+d x)^2 \text{Log}[F]^3 + b^4 \text{Log}[F]^4\right)\right)$$

Problem 316: Result more than twice size of optimal antiderivative.

$$\int F^{a+\frac{b}{(c+d x)^2}} (c+d x)^7 \, dx$$

Optimal (type 4, 31 leaves, 1 step):

$$\frac{b^4 F^a \text{Gamma}\left[-4, -\frac{b \text{Log}[F]}{(c+d x)^2}\right] \text{Log}[F]^4}{2 d}$$

Result (type 4, 96 leaves):

$$\frac{1}{48\, d} F^a \left(-b^4 \text{ExpIntegralEi}\left[\frac{b \text{Log}[F]}{(c+d x)^2}\right] \text{Log}[F]^4 + F^{\frac{b}{(c+d x)^2}} (c+d x)^2 \left(6 (c+d x)^6 + 2 b (c+d x)^4 \text{Log}[F] + b^2 (c+d x)^2 \text{Log}[F]^2 + b^3 \text{Log}[F]^3\right)\right)$$

Problem 327: Result more than twice size of optimal antiderivative.

$$\int F^{a+\frac{b}{(c+d x)^2}} (c+d x)^{10} \, dx$$

Optimal (type 4, 49 leaves, 1 step):

$$\frac{F^a (c+d x)^{11} \text{Gamma}\left[-\frac{11}{2}, -\frac{b \text{Log}[F]}{(c+d x)^2}\right] \left(-\frac{b \text{Log}[F]}{(c+d x)^2}\right)^{11/2}}{2 d}$$

Result (type 4, 145 leaves):

$$\frac{1}{10395\, d} F^a \left(-32 b^{11/2} \sqrt{\pi} \text{Erfi}\left[\frac{\sqrt{b} \sqrt{\text{Log}[F]}}{c+d x}\right] \text{Log}[F]^{11/2} + F^{\frac{b}{(c+d x)^2}} (c+d x) \left(945 (c+d x)^{10} + 210 b (c+d x)^8 \text{Log}[F] + 60 b^2 (c+d x)^6 \text{Log}[F]^2 + 24 b^3 (c+d x)^4 \text{Log}[F]^3 + 16 b^4 (c+d x)^2 \text{Log}[F]^4 + 32 b^5 \text{Log}[F]^5\right)\right)$$

Problem 328: Result more than twice size of optimal antiderivative.

$$\int F^{a+\frac{b}{(c+d x)^2}} (c+d x)^8 \, dx$$

Optimal (type 4, 49 leaves, 1 step):

$$\frac{F^a\,(c+d\,x)^9\,\text{Gamma}\left[-\frac{9}{2},-\frac{b\,\text{Log}[F]}{(c+d\,x)^2}\right]\left(-\frac{b\,\text{Log}[F]}{(c+d\,x)^2}\right)^{9/2}}{2\,d}$$

Result (type 4, 129 leaves):

$$\frac{1}{945\,d}F^a\left(-16\,b^{9/2}\,\sqrt{\pi}\,\text{Erfi}\left[\frac{\sqrt{b}\,\sqrt{\text{Log}[F]}}{c+d\,x}\right]\text{Log}[F]^{9/2}+F^{\frac{b}{(c+d\,x)^2}}\,(c+d\,x)\,\left(105\,(c+d\,x)^8+30\,b\,(c+d\,x)^6\,\text{Log}[F]+12\,b^2\,(c+d\,x)^4\,\text{Log}[F]^2+8\,b^3\,(c+d\,x)^2\,\text{Log}[F]^3+16\,b^4\,\text{Log}[F]^4\right)\right)$$

Problem 338: Result more than twice size of optimal antiderivative.

$$\int\frac{F^{a+\frac{b}{(c+d\,x)^2}}}{(c+d\,x)^{12}}\,dx$$

Optimal (type 4, 49 leaves, 1 step):

$$\frac{F^a\,\text{Gamma}\left[\frac{11}{2},-\frac{b\,\text{Log}[F]}{(c+d\,x)^2}\right]}{2\,d\,(c+d\,x)^{11}\left(-\frac{b\,\text{Log}[F]}{(c+d\,x)^2}\right)^{11/2}}$$

Result (type 4, 143 leaves):

$$\left(F^a\left(945\,\sqrt{\pi}\,\text{Erfi}\left[\frac{\sqrt{b}\,\sqrt{\text{Log}[F]}}{c+d\,x}\right]-\frac{1}{(c+d\,x)^9}2\,\sqrt{b}\,F^{\frac{b}{(c+d\,x)^2}}\,\sqrt{\text{Log}[F]}\,\left(945\,(c+d\,x)^8-630\,b\,(c+d\,x)^6\,\text{Log}[F]+252\,b^2\,(c+d\,x)^4\,\text{Log}[F]^2-72\,b^3\,(c+d\,x)^2\,\text{Log}[F]^3+16\,b^4\,\text{Log}[F]^4\right)\right)\right)\Big/\left(64\,b^{11/2}\,d\,\text{Log}[F]^{11/2}\right)$$

Problem 339: Result more than twice size of optimal antiderivative.

$$\int\frac{F^{a+\frac{b}{(c+d\,x)^2}}}{(c+d\,x)^{14}}\,dx$$

Optimal (type 4, 49 leaves, 1 step):

$$\frac{F^a\,\text{Gamma}\left[\frac{13}{2},-\frac{b\,\text{Log}[F]}{(c+d\,x)^2}\right]}{2\,d\,(c+d\,x)^{13}\left(-\frac{b\,\text{Log}[F]}{(c+d\,x)^2}\right)^{13/2}}$$

Result (type 4, 159 leaves):

$$\left(F^a\left(-10395\sqrt{\pi}\,\text{Erfi}\left[\frac{\sqrt{b}\,\sqrt{\text{Log}[F]}}{c+d\,x}\right]+\frac{1}{(c+d\,x)^{11}}2\sqrt{b}\,F^{\frac{b}{(c+d\,x)^2}}\sqrt{\text{Log}[F]}\left(10395\,(c+d\,x)^{10}-6930\,b\,(c+d\,x)^8\,\text{Log}[F]+2772\,b^2\,(c+d\,x)^6\,\text{Log}[F]^2-792\,b^3\,(c+d\,x)^4\,\text{Log}[F]^3+176\,b^4\,(c+d\,x)^2\,\text{Log}[F]^4-32\,b^5\,\text{Log}[F]^5\right)\right)\right)\Big/\left(128\,b^{13/2}\,d\,\text{Log}[F]^{13/2}\right)$$

Problem 341: Result more than twice size of optimal antiderivative.

$$\int F^{a+\frac{b}{(c+d\,x)^3}}\,(c+d\,x)^{14}\,dx$$

Optimal (type 4, 31 leaves, 1 step):

$$-\frac{b^5\,F^a\,\text{Gamma}\left[-5,-\frac{b\,\text{Log}[F]}{(c+d\,x)^3}\right]\,\text{Log}[F]^5}{3\,d}$$

Result (type 4, 112 leaves):

$$\frac{1}{360\,d}F^a\left(-b^5\,\text{ExpIntegralEi}\left[\frac{b\,\text{Log}[F]}{(c+d\,x)^3}\right]\,\text{Log}[F]^5+F^{\frac{b}{(c+d\,x)^3}}\,(c+d\,x)^3\left(24\,(c+d\,x)^{12}+6\,b\,(c+d\,x)^9\,\text{Log}[F]+2\,b^2\,(c+d\,x)^6\,\text{Log}[F]^2+b^3\,(c+d\,x)^3\,\text{Log}[F]^3+b^4\,\text{Log}[F]^4\right)\right)$$

Problem 342: Result more than twice size of optimal antiderivative.

$$\int F^{a+\frac{b}{(c+d\,x)^3}}\,(c+d\,x)^{11}\,dx$$

Optimal (type 4, 31 leaves, 1 step):

$$\frac{b^4\,F^a\,\text{Gamma}\left[-4,-\frac{b\,\text{Log}[F]}{(c+d\,x)^3}\right]\,\text{Log}[F]^4}{3\,d}$$

Result (type 4, 96 leaves):

$$\frac{1}{72\,d}F^a\left(-b^4\,\text{ExpIntegralEi}\left[\frac{b\,\text{Log}[F]}{(c+d\,x)^3}\right]\,\text{Log}[F]^4+F^{\frac{b}{(c+d\,x)^3}}\,(c+d\,x)^3\left(6\,(c+d\,x)^9+2\,b\,(c+d\,x)^6\,\text{Log}[F]+b^2\,(c+d\,x)^3\,\text{Log}[F]^2+b^3\,\text{Log}[F]^3\right)\right)$$

Problem 359: Unable to integrate problem.

$$\int F^{a+b\,(c+d\,x)^n}\,(c+d\,x)^m\,dx$$

Optimal (type 4, 61 leaves, 1 step):

$$-\frac{1}{d\,n}F^a\,(c+d\,x)^{1+m}\,\text{Gamma}\left[\frac{1+m}{n},\,-b\,(c+d\,x)^n\,\text{Log}[F]\right]\,\left(-b\,(c+d\,x)^n\,\text{Log}[F]\right)^{-\frac{1+m}{n}}$$

Result (type 8, 23 leaves):

$$\int F^{a+b\,(c+d\,x)^n}\,(c+d\,x)^m\,dx$$

Problem 362: Unable to integrate problem.

$$\int F^{a+b\,(c+d\,x)^n}\,(c+d\,x)\,dx$$

Optimal (type 4, 54 leaves, 1 step):

$$-\frac{1}{d\,n}F^a\,(c+d\,x)^2\,\text{Gamma}\left[\frac{2}{n},\,-b\,(c+d\,x)^n\,\text{Log}[F]\right]\,\left(-b\,(c+d\,x)^n\,\text{Log}[F]\right)^{-2/n}$$

Result (type 8, 21 leaves):

$$\int F^{a+b\,(c+d\,x)^n}\,(c+d\,x)\,dx$$

Problem 378: Result more than twice size of optimal antiderivative.

$$\int F^{a+b\,(c+d\,x)^n}\,(c+d\,x)^{-1-4\,n}\,dx$$

Optimal (type 4, 32 leaves, 1 step):

$$-\frac{b^4\,F^a\,\text{Gamma}\left[-4,\,-b\,(c+d\,x)^n\,\text{Log}[F]\right]\,\text{Log}[F]^4}{d\,n}$$

Result (type 4, 113 leaves):

$$\frac{1}{24\,d\,n}F^a\,(c+d\,x)^{-4\,n}\,\left(b^4\,(c+d\,x)^{4\,n}\,\text{ExpIntegralEi}\left[b\,(c+d\,x)^n\,\text{Log}[F]\right]\,\text{Log}[F]^4-F^{b\,(c+d\,x)^n}\,\left(6+2\,b\,(c+d\,x)^n\,\text{Log}[F]+b^2\,(c+d\,x)^{2\,n}\,\text{Log}[F]^2+b^3\,(c+d\,x)^{3\,n}\,\text{Log}[F]^3\right)\right)$$

Problem 379: Result more than twice size of optimal antiderivative.

$$\int F^{a+b\,(c+d\,x)^n}\,(c+d\,x)^{-1-5\,n}\,dx$$

Optimal (type 4, 31 leaves, 1 step):

$$\frac{b^5\,F^a\,\text{Gamma}\left[-5,\,-b\,(c+d\,x)^n\,\text{Log}[F]\right]\,\text{Log}[F]^5}{d\,n}$$

Result (type 4, 131 leaves):

$$\frac{1}{120\,d\,n}F^a\,(c+d\,x)^{-5\,n}\left(b^5\,(c+d\,x)^{5\,n}\,\text{ExpIntegralEi}\left[b\,(c+d\,x)^n\,\text{Log}[F]\right]\,\text{Log}[F]^5-F^{b\,(c+d\,x)^n}\left(24+6\,b\,(c+d\,x)^n\,\text{Log}[F]+2\,b^2\,(c+d\,x)^{2\,n}\,\text{Log}[F]^2+b^3\,(c+d\,x)^{3\,n}\,\text{Log}[F]^3+b^4\,(c+d\,x)^{4\,n}\,\text{Log}[F^4]\right)\right)$$

Problem 380: Unable to integrate problem.

$$\int F^{c\,(a+b\,x)^n}\,(a+b\,x)^{-1+\frac{n}{2}}\,dx$$

Optimal (type 4, 47 leaves, 2 steps):

$$\frac{\sqrt{\pi}\,\text{Erfi}\left[\sqrt{c}\,(a+b\,x)^{n/2}\,\sqrt{\text{Log}[F]}\right]}{b\,\sqrt{c}\,n\,\sqrt{\text{Log}[F]}}$$

Result (type 8, 27 leaves):

$$\int F^{c\,(a+b\,x)^n}\,(a+b\,x)^{-1+\frac{n}{2}}\,dx$$

Problem 381: Unable to integrate problem.

$$\int F^{-c\,(a+b\,x)^n}\,(a+b\,x)^{-1+\frac{n}{2}}\,dx$$

Optimal (type 4, 47 leaves, 2 steps):

$$\frac{\sqrt{\pi}\,\text{Erf}\left[\sqrt{c}\,(a+b\,x)^{n/2}\,\sqrt{\text{Log}[F]}\right]}{b\,\sqrt{c}\,n\,\sqrt{\text{Log}[F]}}$$

Result (type 8, 28 leaves):

$$\int F^{-c\,(a+b\,x)^n}\,(a+b\,x)^{-1+\frac{n}{2}}\,dx$$

Problem 391: Unable to integrate problem.

$$\int e^{e\,(c+d\,x)^3}\,(a+b\,x)^3\,dx$$

Optimal (type 4, 177 leaves, 6 steps):

$$-\frac{b^2\,(b\,c-a\,d)\,e^{e\,(c+d\,x)^3}}{d^4\,e}+\frac{(b\,c-a\,d)^3\,(c+d\,x)\,\text{Gamma}\left[\frac{1}{3},-e\,(c+d\,x)^3\right]}{3\,d^4\,\left(-e\,(c+d\,x)^3\right)^{1/3}}-\frac{b\,(b\,c-a\,d)^2\,(c+d\,x)^2\,\text{Gamma}\left[\frac{2}{3},-e\,(c+d\,x)^3\right]}{d^4\,\left(-e\,(c+d\,x)^3\right)^{2/3}}-\frac{b^3\,(c+d\,x)^4\,\text{Gamma}\left[\frac{4}{3},-e\,(c+d\,x)^3\right]}{3\,d^4\,\left(-e\,(c+d\,x)^3\right)^{4/3}}$$

Result (type 8, 21 leaves):

$$\int e^{e\,(c+d\,x)^3}\,(a+b\,x)^3\,dx$$

Problem 392: Unable to integrate problem.

$$\int e^{e\,(c+d\,x)^3}\,(a+b\,x)^2\,dx$$

Optimal (type 4, 126 leaves, 5 steps):

$$\frac{b^2\,e^{e\,(c+d\,x)^3}}{3\,d^3\,e}-\frac{(b\,c-a\,d)^2\,(c+d\,x)\,\text{Gamma}\left[\frac{1}{3},-e\,(c+d\,x)^3\right]}{3\,d^3\,\left(-e\,(c+d\,x)^3\right)^{1/3}}+\frac{2\,b\,(b\,c-a\,d)\,(c+d\,x)^2\,\text{Gamma}\left[\frac{2}{3},-e\,(c+d\,x)^3\right]}{3\,d^3\,\left(-e\,(c+d\,x)^3\right)^{2/3}}$$

Result (type 8, 21 leaves):

$$\int e^{e\,(c+d\,x)^3}\,(a+b\,x)^2\,dx$$

Problem 393: Unable to integrate problem.

$$\int e^{e\,(c+d\,x)^3}\,(a+b\,x)\,dx$$

Optimal (type 4, 92 leaves, 4 steps):

$$\frac{(b\,c-a\,d)\,(c+d\,x)\,\text{Gamma}\left[\frac{1}{3},-e\,(c+d\,x)^3\right]}{3\,d^2\,\left(-e\,(c+d\,x)^3\right)^{1/3}}-\frac{b\,(c+d\,x)^2\,\text{Gamma}\left[\frac{2}{3},-e\,(c+d\,x)^3\right]}{3\,d^2\,\left(-e\,(c+d\,x)^3\right)^{2/3}}$$

Result (type 8, 19 leaves):

$$\int e^{e\,(c+d\,x)^3}\,(a+b\,x)\,dx$$

Problem 399: Unable to integrate problem.

$$\int \frac{F^{a+\frac{b}{c+d\,x}}}{(e+f\,x)^3}\,dx$$

Optimal (type 4, 267 leaves, 18 steps):

$$\frac{d^2 F^{a+\frac{b}{c+d x}}}{2 f (d e-c f)^2}-\frac{F^{a+\frac{b}{c+d x}}}{2 f (e+f x)^2}-\frac{b d^2 F^{a+\frac{b}{c+d x}} \text{Log}[F]}{2 (d e-c f)^3}+\frac{b d F^{a+\frac{b}{c+d x}} \text{Log}[F]}{2 (d e-c f)^2 (e+f x)}-\frac{b d^2 F^{a-\frac{b f}{d e-c f}} \text{ExpIntegralEi}\left[\frac{b d (e+f x) \text{Log}[F]}{(d e-c f) (c+d x)}\right] \text{Log}[F]}{(d e-c f)^3}+\frac{b^2 d^2 f F^{a-\frac{b f}{d e-c f}} \text{ExpIntegralEi}\left[\frac{b d (e+f x) \text{Log}[F]}{(d e-c f) (c+d x)}\right] \text{Log}[F]^2}{2 (d e-c f)^4}$$

Result (type 8, 23 leaves) :

$$\int \frac{F^{a+\frac{b}{c+d x}}}{(e+f x)^3} \, dx$$

Problem 400: Unable to integrate problem.

$$\int \frac{F^{a+\frac{b}{c+d x}}}{(e+f x)^4} \, dx$$

Optimal (type 4, 460 leaves, 36 steps) :

$$\frac{d^3 F^{a+\frac{b}{c+d x}}}{3 f (d e-c f)^3}-\frac{F^{a+\frac{b}{c+d x}}}{3 f (e+f x)^3}-\frac{5 b d^3 F^{a+\frac{b}{c+d x}} \text{Log}[F]}{6 (d e-c f)^4}+\frac{b d F^{a+\frac{b}{c+d x}} \text{Log}[F]}{6 (d e-c f)^2 (e+f x)^2}+\frac{2 b d^2 F^{a+\frac{b}{c+d x}} \text{Log}[F]}{3 (d e-c f)^3 (e+f x)}-\frac{b d^3 F^{a-\frac{b f}{d e-c f}} \text{ExpIntegralEi}\left[\frac{b d (e+f x) \text{Log}[F]}{(d e-c f) (c+d x)}\right] \text{Log}[F]}{(d e-c f)^4}+\frac{b^2 d^3 f F^{a+\frac{b}{c+d x}} \text{Log}[F]^2}{6 (d e-c f)^5}-\frac{b^2 d^2 f F^{a+\frac{b}{c+d x}} \text{Log}[F]^2}{6 (d e-c f)^4 (e+f x)}+\frac{b^2 d^3 f F^{a-\frac{b f}{d e-c f}} \text{ExpIntegralEi}\left[\frac{b d (e+f x) \text{Log}[F]}{(d e-c f) (c+d x)}\right] \text{Log}[F]^2}{(d e-c f)^5}-\frac{b^3 d^3 f^2 F^{a-\frac{b f}{d e-c f}} \text{ExpIntegralEi}\left[\frac{b d (e+f x) \text{Log}[F]}{(d e-c f) (c+d x)}\right] \text{Log}[F]^3}{6 (d e-c f)^6}$$

Result (type 8, 23 leaves) :

$$\int \frac{F^{a+\frac{b}{c+d x}}}{(e+f x)^4} \, dx$$

Problem 408: Unable to integrate problem.

$$\int \frac{e^{\frac{e}{c+d x}}}{(a+b x)^3} \, dx$$

Optimal (type 4, 240 leaves, 18 steps) :

$$\frac{d^2 e^{\frac{e}{c+d x}}}{2 b (b c-a d)^2}+\frac{d^2 e\, e^{\frac{e}{c+d x}}}{2 (b c-a d)^3}-\frac{e^{\frac{e}{c+d x}}}{2 b (a+b x)^2}+\frac{d e\, e^{\frac{e}{c+d x}}}{2 (b c-a d)^2 (a+b x)}+$$
$$\frac{d^2 e\, e^{\frac{b e}{b c-a d}} \text{ExpIntegralEi}\left[-\frac{d e (a+b x)}{(b c-a d) (c+d x)}\right]}{(b c-a d)^3}+\frac{b d^2 e^2 e^{\frac{b e}{b c-a d}} \text{ExpIntegralEi}\left[-\frac{d e (a+b x)}{(b c-a d) (c+d x)}\right]}{2 (b c-a d)^4}$$

Result (type 8, 21 leaves):

$$\int \frac{e^{\frac{e}{c+d x}}}{(a+b x)^3}\, dx$$

Problem 423: Unable to integrate problem.

$$\int \frac{F^{e+\frac{f (a+b x)}{c+d x}}}{(g+h x)^2}\, dx$$

Optimal (type 4, 159 leaves, 12 steps):

$$\frac{d F^{e+\frac{b f}{d}-\frac{(b c-a d) f}{d (c+d x)}}}{h (d g-c h)}-\frac{F^{e+\frac{f (a+b x)}{c+d x}}}{h (g+h x)}+\frac{(b c-a d) f F^{e+\frac{f (b g-a h)}{d g-c h}} \text{ExpIntegralEi}\left[-\frac{(b c-a d) f (g+h x) \text{Log}[F]}{(d g-c h) (c+d x)}\right] \text{Log}[F]}{(d g-c h)^2}$$

Result (type 8, 28 leaves):

$$\int \frac{F^{e+\frac{f (a+b x)}{c+d x}}}{(g+h x)^2}\, dx$$

Problem 424: Unable to integrate problem.

$$\int \frac{F^{e+\frac{f (a+b x)}{c+d x}}}{(g+h x)^3}\, dx$$

Optimal (type 4, 366 leaves, 24 steps):

$$\frac{d^2 F^{e+\frac{b f}{d}-\frac{(b c-a d) f}{d (c+d x)}}}{2 h (d g-c h)^2}-\frac{F^{e+\frac{f (a+b x)}{c+d x}}}{2 h (g+h x)^2}+\frac{d (b c-a d) f F^{e+\frac{b f}{d}-\frac{(b c-a d) f}{d (c+d x)}} \text{Log}[F]}{2 (d g-c h)^3}-\frac{(b c-a d) f F^{e+\frac{f (a+b x)}{c+d x}} \text{Log}[F]}{2 (d g-c h)^2 (g+h x)}+$$
$$\frac{d (b c-a d) f F^{e+\frac{f (b g-a h)}{d g-c h}} \text{ExpIntegralEi}\left[-\frac{(b c-a d) f (g+h x) \text{Log}[F]}{(d g-c h) (c+d x)}\right] \text{Log}[F]}{(d g-c h)^3}+\frac{1}{2 (d g-c h)^4}$$
$$(b c-a d)^2 f^2 F^{e+\frac{f (b g-a h)}{d g-c h}} h \text{ExpIntegralEi}\left[-\frac{(b c-a d) f (g+h x) \text{Log}[F]}{(d g-c h) (c+d x)}\right] \text{Log}[F]^2$$

Result (type 8, 28 leaves):

$$\int \frac{F^{e+\frac{f (a+b x)}{c+d x}}}{(g+h x)^3}\, dx$$

Problem 425: Unable to integrate problem.

$$\int \frac{F^{e+\frac{f (a+b x)}{c+d x}}}{(g+h x)^4}\, dx$$

Optimal (type 4, 634 leaves, 48 steps):

$$\frac{d^3 F^{e+\frac{b f}{d}-\frac{(b c-a d) f}{d (c+d x)}}}{3 h (d g-c h)^3}-\frac{F^{e+\frac{f (a+b x)}{c+d x}}}{3 h (g+h x)^3}+\frac{5 d^2 (b c-a d) f F^{e+\frac{b f}{d}-\frac{(b c-a d) f}{d (c+d x)}} \text{Log}[F]}{6 (d g-c h)^4}-$$
$$\frac{(b c-a d) f F^{e+\frac{f (a+b x)}{c+d x}} \text{Log}[F]}{6 (d g-c h)^2 (g+h x)^2}-\frac{2 d (b c-a d) f F^{e+\frac{f (a+b x)}{c+d x}} \text{Log}[F]}{3 (d g-c h)^3 (g+h x)}+\frac{1}{(d g-c h)^4}$$
$$d^2 (b c-a d) f F^{e+\frac{f (b g-a h)}{d g-c h}} \text{ExpIntegralEi}\left[-\frac{(b c-a d) f (g+h x) \text{Log}[F]}{(d g-c h) (c+d x)}\right] \text{Log}[F]+$$
$$\frac{d (b c-a d)^2 f^2 F^{e+\frac{b f}{d}-\frac{(b c-a d) f}{d (c+d x)}} h \text{Log}[F]^2}{6 (d g-c h)^5}-\frac{(b c-a d)^2 f^2 F^{e+\frac{f (a+b x)}{c+d x}} h \text{Log}[F]^2}{6 (d g-c h)^4 (g+h x)}+\frac{1}{(d g-c h)^5}$$
$$d (b c-a d)^2 f^2 F^{e+\frac{f (b g-a h)}{d g-c h}} h \text{ExpIntegralEi}\left[-\frac{(b c-a d) f (g+h x) \text{Log}[F]}{(d g-c h) (c+d x)}\right] \text{Log}[F]^2+$$
$$\frac{1}{6 (d g-c h)^6} (b c-a d)^3 f^3 F^{e+\frac{f (b g-a h)}{d g-c h}} h^2 \text{ExpIntegralEi}\left[-\frac{(b c-a d) f (g+h x) \text{Log}[F]}{(d g-c h) (c+d x)}\right] \text{Log}[F]^3$$

Result (type 8, 28 leaves):

$$\int \frac{F^{e+\frac{f (a+b x)}{c+d x}}}{(g+h x)^4}\, dx$$

Problem 462: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{e^{a+b x}}{x^2 (c+d x^2)}\, dx$$

Optimal (type 4, 145 leaves, 8 steps):

$$-\frac{e^{a+b x}}{c x}+\frac{b e^a \text{ExpIntegralEi}[b x]}{c}+$$
$$\frac{\sqrt{d}\, e^{a+\frac{b \sqrt{-c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[-\frac{b \left(\sqrt{-c}-\sqrt{d} x\right)}{\sqrt{d}}\right]}{2 (-c)^{3/2}}-\frac{\sqrt{d}\, e^{a-\frac{b \sqrt{-c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[\frac{b \left(\sqrt{-c}+\sqrt{d} x\right)}{\sqrt{d}}\right]}{2 (-c)^{3/2}}$$

Result (type 4, 133 leaves):

$$\frac{1}{2 c^{3/2} x} e^a \left(-2 \sqrt{c}\, e^{b x} + 2 b \sqrt{c}\, x\, \text{ExpIntegralEi}[b x] + i \sqrt{d}\, e^{\frac{i b \sqrt{c}}{\sqrt{d}}} x\, \text{ExpIntegralEi}\left[b \left(-\frac{i \sqrt{c}}{\sqrt{d}} + x\right)\right] - i \sqrt{d}\, e^{-\frac{i b \sqrt{c}}{\sqrt{d}}} x\, \text{ExpIntegralEi}\left[b \left(\frac{i \sqrt{c}}{\sqrt{d}} + x\right)\right]\right)$$

Problem 463: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{e^{a+b x}}{x \left(c + d x^2\right)} \, dx$$

Optimal (type 4, 111 leaves, 7 steps):

$$\frac{e^a \text{ExpIntegralEi}[b x]}{c} - \frac{e^{a+\frac{b \sqrt{-c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[-\frac{b \left(\sqrt{-c} - \sqrt{d}\, x\right)}{\sqrt{d}}\right]}{2 c} - \frac{e^{a-\frac{b \sqrt{-c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[\frac{b \left(\sqrt{-c} + \sqrt{d}\, x\right)}{\sqrt{d}}\right]}{2 c}$$

Result (type 4, 93 leaves):

$$\frac{1}{2 c} e^a \left(2\, \text{ExpIntegralEi}[b x] - e^{-\frac{i b \sqrt{c}}{\sqrt{d}}} \left(e^{\frac{2 i b \sqrt{c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[b \left(-\frac{i \sqrt{c}}{\sqrt{d}} + x\right)\right] + \text{ExpIntegralEi}\left[b \left(\frac{i \sqrt{c}}{\sqrt{d}} + x\right)\right]\right)\right)$$

Problem 464: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{e^{a+b x}}{c + d x^2} \, dx$$

Optimal (type 4, 118 leaves, 4 steps):

$$\frac{e^{a+\frac{b \sqrt{-c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[-\frac{b \left(\sqrt{-c} - \sqrt{d}\, x\right)}{\sqrt{d}}\right]}{2 \sqrt{-c} \sqrt{d}} - \frac{e^{a-\frac{b \sqrt{-c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[\frac{b \left(\sqrt{-c} + \sqrt{d}\, x\right)}{\sqrt{d}}\right]}{2 \sqrt{-c} \sqrt{d}}$$

Result (type 4, 94 leaves):

$$-\frac{1}{2 \sqrt{c} \sqrt{d}} i\, e^{a-\frac{i b \sqrt{c}}{\sqrt{d}}} \left(e^{\frac{2 i b \sqrt{c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[b \left(-\frac{i \sqrt{c}}{\sqrt{d}} + x\right)\right] - \text{ExpIntegralEi}\left[b \left(\frac{i \sqrt{c}}{\sqrt{d}} + x\right)\right]\right)$$

Problem 465: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{e^{a+b x} x}{c+d x^2} \, dx$$

Optimal (type 4, 100 leaves, 4 steps):

$$\frac{e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[-\frac{b\left(\sqrt{-c}-\sqrt{d}\, x\right)}{\sqrt{d}}\right]}{2 d}+\frac{e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[\frac{b\left(\sqrt{-c}+\sqrt{d}\, x\right)}{\sqrt{d}}\right]}{2 d}$$

Result (type 4, 83 leaves):

$$\frac{1}{2 d} e^{a-\frac{i b\sqrt{c}}{\sqrt{d}}} \left(e^{\frac{2 i b\sqrt{c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[b\left(-\frac{i\sqrt{c}}{\sqrt{d}}+x\right)\right]+\text{ExpIntegralEi}\left[b\left(\frac{i\sqrt{c}}{\sqrt{d}}+x\right)\right]\right)$$

Problem 466: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{e^{a+b x} x^2}{c+d x^2} \, dx$$

Optimal (type 4, 132 leaves, 7 steps):

$$\frac{e^{a+b x}}{b d}+\frac{\sqrt{-c}\, e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[-\frac{b\left(\sqrt{-c}-\sqrt{d}\, x\right)}{\sqrt{d}}\right]}{2 d^{3/2}}-\frac{\sqrt{-c}\, e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[\frac{b\left(\sqrt{-c}+\sqrt{d}\, x\right)}{\sqrt{d}}\right]}{2 d^{3/2}}$$

Result (type 4, 120 leaves):

$$\frac{1}{2 b d^{3/2}} e^a \left(2\sqrt{d}\, e^{b x}+i b\sqrt{c}\, e^{\frac{i b\sqrt{c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[b\left(-\frac{i\sqrt{c}}{\sqrt{d}}+x\right)\right]-\right.$$
$$\left. i b\sqrt{c}\, e^{-\frac{i b\sqrt{c}}{\sqrt{d}}} \text{ExpIntegralEi}\left[b\left(\frac{i\sqrt{c}}{\sqrt{d}}+x\right)\right]\right)$$

Problem 485: Result unnecessarily involves higher level functions.

$$\int \frac{2^x}{a+4^{-x} b} \, dx$$

Optimal (type 3, 43 leaves, 4 steps):

$$\frac{2^x}{a \text{Log}[2]}-\frac{\sqrt{b}\, \text{ArcTan}\left[\frac{2^x\sqrt{a}}{\sqrt{b}}\right]}{a^{3/2} \text{Log}[2]}$$

Result (type 5, 36 leaves):

$$\frac{8^x \text{Hypergeometric2F1}\left[1, \frac{\text{Log}[8]}{\text{Log}[4]}, \frac{\text{Log}[32]}{\text{Log}[4]}, -\frac{4^x a}{b}\right]}{b \text{Log}[8]}$$

Problem 486: Result unnecessarily involves higher level functions.

$$\int \frac{2^x}{a + 2^{-2x} b} \, dx$$

Optimal (type 3, 43 leaves, 4 steps):

$$\frac{2^x}{a \text{Log}[2]} - \frac{\sqrt{b} \text{ArcTan}\left[\frac{2^x \sqrt{a}}{\sqrt{b}}\right]}{a^{3/2} \text{Log}[2]}$$

Result (type 5, 36 leaves):

$$\frac{8^x \text{Hypergeometric2F1}\left[1, \frac{\text{Log}[8]}{\text{Log}[4]}, \frac{\text{Log}[32]}{\text{Log}[4]}, -\frac{4^x a}{b}\right]}{b \text{Log}[8]}$$

Problem 487: Result unnecessarily involves higher level functions.

$$\int \frac{2^x}{a - 4^{-x} b} \, dx$$

Optimal (type 3, 43 leaves, 4 steps):

$$\frac{2^x}{a \text{Log}[2]} - \frac{\sqrt{b} \text{ArcTanh}\left[\frac{2^x \sqrt{a}}{\sqrt{b}}\right]}{a^{3/2} \text{Log}[2]}$$

Result (type 5, 36 leaves):

$$-\frac{8^x \text{Hypergeometric2F1}\left[1, \frac{\text{Log}[8]}{\text{Log}[4]}, \frac{\text{Log}[32]}{\text{Log}[4]}, \frac{4^x a}{b}\right]}{b \text{Log}[8]}$$

Problem 488: Result unnecessarily involves higher level functions.

$$\int \frac{2^x}{a - 2^{-2x} b} \, dx$$

Optimal (type 3, 43 leaves, 4 steps):

$$\frac{2^x}{a \text{Log}[2]} - \frac{\sqrt{b} \text{ArcTanh}\left[\frac{2^x \sqrt{a}}{\sqrt{b}}\right]}{a^{3/2} \text{Log}[2]}$$

Result (type 5, 36 leaves):

$$-\frac{8^x \text{Hypergeometric2F1}\left[1, \frac{\text{Log}[8]}{\text{Log}[4]}, \frac{\text{Log}[32]}{\text{Log}[4]}, \frac{4^x a}{b}\right]}{b \text{Log}[8]}$$

Problem 524: Attempted integration timed out after 120 seconds.

$$\int \frac{x}{a+b\,f^{c+d\,x}+c\,f^{2\,c+2\,d\,x}}\,dx$$

Optimal (type 4, 338 leaves, 9 steps):

$$-\frac{c\,x^2}{b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}}-\frac{c\,x^2}{b^2-4\,a\,c+b\,\sqrt{b^2-4\,a\,c}}-\frac{2\,c\,x\,\text{Log}\left[1+\frac{2\,c\,f^{c+d\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\sqrt{b^2-4\,a\,c}\,\left(b-\sqrt{b^2-4\,a\,c}\right)\,d\,\text{Log}[f]}+\frac{2\,c\,x\,\text{Log}\left[1+\frac{2\,c\,f^{c+d\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\sqrt{b^2-4\,a\,c}\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,d\,\text{Log}[f]}-\frac{2\,c\,\text{PolyLog}\left[2,-\frac{2\,c\,f^{c+d\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\sqrt{b^2-4\,a\,c}\,\left(b-\sqrt{b^2-4\,a\,c}\right)\,d^2\,\text{Log}[f]^2}+\frac{2\,c\,\text{PolyLog}\left[2,-\frac{2\,c\,f^{c+d\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\sqrt{b^2-4\,a\,c}\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,d^2\,\text{Log}[f]^2}$$

Result (type 1, 1 leaves):

???

Problem 526: Unable to integrate problem.

$$\int \frac{x^2}{a+b\,f^{c+d\,x}+c\,f^{2\,c+2\,d\,x}}\,dx$$

Optimal (type 4, 484 leaves, 11 steps):

$$-\frac{2\,c\,x^3}{3\,\left(b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}\right)}-\frac{2\,c\,x^3}{3\,\left(b^2-4\,a\,c+b\,\sqrt{b^2-4\,a\,c}\right)}-\frac{2\,c\,x^2\,\text{Log}\left[1+\frac{2\,c\,f^{c+d\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\sqrt{b^2-4\,a\,c}\,\left(b-\sqrt{b^2-4\,a\,c}\right)\,d\,\text{Log}[f]}+\frac{2\,c\,x^2\,\text{Log}\left[1+\frac{2\,c\,f^{c+d\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\sqrt{b^2-4\,a\,c}\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,d\,\text{Log}[f]}-\frac{4\,c\,x\,\text{PolyLog}\left[2,-\frac{2\,c\,f^{c+d\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\sqrt{b^2-4\,a\,c}\,\left(b-\sqrt{b^2-4\,a\,c}\right)\,d^2\,\text{Log}[f]^2}+\frac{4\,c\,x\,\text{PolyLog}\left[2,-\frac{2\,c\,f^{c+d\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\sqrt{b^2-4\,a\,c}\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,d^2\,\text{Log}[f]^2}+\frac{4\,c\,\text{PolyLog}\left[3,-\frac{2\,c\,f^{c+d\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\sqrt{b^2-4\,a\,c}\,\left(b-\sqrt{b^2-4\,a\,c}\right)\,d^3\,\text{Log}[f]^3}-\frac{4\,c\,\text{PolyLog}\left[3,-\frac{2\,c\,f^{c+d\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\sqrt{b^2-4\,a\,c}\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,d^3\,\text{Log}[f]^3}$$

Result (type 8, 31 leaves):

$$\int \frac{x^2}{a+b\,f^{c+d\,x}+c\,f^{2\,c+2\,d\,x}}\,dx$$

Problem 541: Unable to integrate problem.

$$\int \frac{x}{a + b\, f^{-c-d\,x} + c\, f^{c+d\,x}}\, dx$$

Optimal (type 4, 203 leaves, 8 steps):

$$\frac{x\, \text{Log}\left[1 + \frac{2\, c\, f^{c+d\,x}}{a-\sqrt{a^2-4\,b\,c}}\right]}{\sqrt{a^2-4\,b\,c}\; d\, \text{Log}[f]} - \frac{x\, \text{Log}\left[1 + \frac{2\, c\, f^{c+d\,x}}{a+\sqrt{a^2-4\,b\,c}}\right]}{\sqrt{a^2-4\,b\,c}\; d\, \text{Log}[f]} + \frac{\text{PolyLog}\left[2, -\frac{2\, c\, f^{c+d\,x}}{a-\sqrt{a^2-4\,b\,c}}\right]}{\sqrt{a^2-4\,b\,c}\; d^2\, \text{Log}[f]^2} - \frac{\text{PolyLog}\left[2, -\frac{2\, c\, f^{c+d\,x}}{a+\sqrt{a^2-4\,b\,c}}\right]}{\sqrt{a^2-4\,b\,c}\; d^2\, \text{Log}[f]^2}$$

Result (type 8, 29 leaves):

$$\int \frac{x}{a + b\, f^{-c-d\,x} + c\, f^{c+d\,x}}\, dx$$

Problem 542: Unable to integrate problem.

$$\int \frac{x^2}{a + b\, f^{-c-d\,x} + c\, f^{c+d\,x}}\, dx$$

Optimal (type 4, 310 leaves, 10 steps):

$$\frac{x^2\, \text{Log}\left[1 + \frac{2\, c\, f^{c+d\,x}}{a-\sqrt{a^2-4\,b\,c}}\right]}{\sqrt{a^2-4\,b\,c}\; d\, \text{Log}[f]} - \frac{x^2\, \text{Log}\left[1 + \frac{2\, c\, f^{c+d\,x}}{a+\sqrt{a^2-4\,b\,c}}\right]}{\sqrt{a^2-4\,b\,c}\; d\, \text{Log}[f]} + \frac{2\, x\, \text{PolyLog}\left[2, -\frac{2\, c\, f^{c+d\,x}}{a-\sqrt{a^2-4\,b\,c}}\right]}{\sqrt{a^2-4\,b\,c}\; d^2\, \text{Log}[f]^2} -$$
$$\frac{2\, x\, \text{PolyLog}\left[2, -\frac{2\, c\, f^{c+d\,x}}{a+\sqrt{a^2-4\,b\,c}}\right]}{\sqrt{a^2-4\,b\,c}\; d^2\, \text{Log}[f]^2} - \frac{2\, \text{PolyLog}\left[3, -\frac{2\, c\, f^{c+d\,x}}{a-\sqrt{a^2-4\,b\,c}}\right]}{\sqrt{a^2-4\,b\,c}\; d^3\, \text{Log}[f]^3} + \frac{2\, \text{PolyLog}\left[3, -\frac{2\, c\, f^{c+d\,x}}{a+\sqrt{a^2-4\,b\,c}}\right]}{\sqrt{a^2-4\,b\,c}\; d^3\, \text{Log}[f]^3}$$

Result (type 8, 31 leaves):

$$\int \frac{x^2}{a + b\, f^{-c-d\,x} + c\, f^{c+d\,x}}\, dx$$

Problem 544: Unable to integrate problem.

$$\int \frac{\left(a + b\, F^{\frac{c\sqrt{d+e\,x}}{\sqrt{f+g\,x}}}\right)^3}{d\, f + (e\, f + d\, g)\, x + e\, g\, x^2}\, dx$$

Optimal (type 4, 154 leaves, 6 steps):

$$\frac{6\, a^2\, b\, \text{ExpIntegralEi}\left[\frac{c\sqrt{d+e\,x}\; \text{Log}[F]}{\sqrt{f+g\,x}}\right]}{e\, f - d\, g} + \frac{6\, a\, b^2\, \text{ExpIntegralEi}\left[\frac{2\, c\sqrt{d+e\,x}\; \text{Log}[F]}{\sqrt{f+g\,x}}\right]}{e\, f - d\, g} +$$
$$\frac{2\, b^3\, \text{ExpIntegralEi}\left[\frac{3\, c\sqrt{d+e\,x}\; \text{Log}[F]}{\sqrt{f+g\,x}}\right]}{e\, f - d\, g} + \frac{2\, a^3\, \text{Log}\left[\frac{\sqrt{d+e\,x}}{\sqrt{f+g\,x}}\right]}{e\, f - d\, g}$$

Result (type 8, 52 leaves):

$$\int \frac{\left(a+b\,F^{\frac{c\,\sqrt{d+e\,x}}{\sqrt{f+g\,x}}}\right)^3}{d\,f+\left(e\,f+d\,g\right)\,x+e\,g\,x^2}\,dx$$

Problem 545: Unable to integrate problem.

$$\int \frac{\left(a+b\,F^{\frac{c\,\sqrt{d+e\,x}}{\sqrt{f+g\,x}}}\right)^2}{d\,f+\left(e\,f+d\,g\right)\,x+e\,g\,x^2}\,dx$$

Optimal (type 4, 112 leaves, 5 steps):

$$\frac{4\,a\,b\,\text{ExpIntegralEi}\left[\frac{c\,\sqrt{d+e\,x}\,\text{Log}[F]}{\sqrt{f+g\,x}}\right]}{e\,f-d\,g}+\frac{2\,b^2\,\text{ExpIntegralEi}\left[\frac{2\,c\,\sqrt{d+e\,x}\,\text{Log}[F]}{\sqrt{f+g\,x}}\right]}{e\,f-d\,g}+\frac{2\,a^2\,\text{Log}\left[\frac{\sqrt{d+e\,x}}{\sqrt{f+g\,x}}\right]}{e\,f-d\,g}$$

Result (type 8, 52 leaves):

$$\int \frac{\left(a+b\,F^{\frac{c\,\sqrt{d+e\,x}}{\sqrt{f+g\,x}}}\right)^2}{d\,f+\left(e\,f+d\,g\right)\,x+e\,g\,x^2}\,dx$$

Problem 546: Unable to integrate problem.

$$\int \frac{a+b\,F^{\frac{c\,\sqrt{d+e\,x}}{\sqrt{f+g\,x}}}}{d\,f+\left(e\,f+d\,g\right)\,x+e\,g\,x^2}\,dx$$

Optimal (type 4, 70 leaves, 4 steps):

$$\frac{2\,b\,\text{ExpIntegralEi}\left[\frac{c\,\sqrt{d+e\,x}\,\text{Log}[F]}{\sqrt{f+g\,x}}\right]}{e\,f-d\,g}+\frac{2\,a\,\text{Log}\left[\frac{\sqrt{d+e\,x}}{\sqrt{f+g\,x}}\right]}{e\,f-d\,g}$$

Result (type 8, 50 leaves):

$$\int \frac{a+b\,F^{\frac{c\,\sqrt{d+e\,x}}{\sqrt{f+g\,x}}}}{d\,f+\left(e\,f+d\,g\right)\,x+e\,g\,x^2}\,dx$$

Problem 551: Unable to integrate problem.

$$\int \frac{\left(a + b F^{\frac{c \sqrt{d+e x}}{\sqrt{d f-e f x}}}\right)^3}{d^2 - e^2 x^2} \, dx$$

Optimal (type 4, 152 leaves, 6 steps):

$$\frac{3 a^2 b \, \text{ExpIntegralEi}\left[\frac{c \sqrt{d+e x} \, \text{Log}[F]}{\sqrt{d f-e f x}}\right]}{d e} + \frac{3 a b^2 \, \text{ExpIntegralEi}\left[\frac{2 c \sqrt{d+e x} \, \text{Log}[F]}{\sqrt{d f-e f x}}\right]}{d e} + \frac{b^3 \, \text{ExpIntegralEi}\left[\frac{3 c \sqrt{d+e x} \, \text{Log}[F]}{\sqrt{d f-e f x}}\right]}{d e} + \frac{a^3 \, \text{Log}\left[\frac{\sqrt{d+e x}}{\sqrt{d f-e f x}}\right]}{d e}$$

Result (type 8, 49 leaves):

$$\int \frac{\left(a + b F^{\frac{c \sqrt{d+e x}}{\sqrt{d f-e f x}}}\right)^3}{d^2 - e^2 x^2} \, dx$$

Problem 552: Unable to integrate problem.

$$\int \frac{\left(a + b F^{\frac{c \sqrt{d+e x}}{\sqrt{d f-e f x}}}\right)^2}{d^2 - e^2 x^2} \, dx$$

Optimal (type 4, 110 leaves, 5 steps):

$$\frac{2 a b \, \text{ExpIntegralEi}\left[\frac{c \sqrt{d+e x} \, \text{Log}[F]}{\sqrt{d f-e f x}}\right]}{d e} + \frac{b^2 \, \text{ExpIntegralEi}\left[\frac{2 c \sqrt{d+e x} \, \text{Log}[F]}{\sqrt{d f-e f x}}\right]}{d e} + \frac{a^2 \, \text{Log}\left[\frac{\sqrt{d+e x}}{\sqrt{d f-e f x}}\right]}{d e}$$

Result (type 8, 49 leaves):

$$\int \frac{\left(a + b F^{\frac{c \sqrt{d+e x}}{\sqrt{d f-e f x}}}\right)^2}{d^2 - e^2 x^2} \, dx$$

Problem 553: Unable to integrate problem.

$$\int \frac{a + b F^{\frac{c \sqrt{d+e x}}{\sqrt{d f-e f x}}}}{d^2 - e^2 x^2} \, dx$$

Optimal (type 4, 68 leaves, 4 steps):

$$\frac{b\,\text{ExpIntegralEi}\left[\frac{c\sqrt{d+e\,x}\,\text{Log}[F]}{\sqrt{d\,f-e\,f\,x}}\right]}{d\,e}+\frac{a\,\text{Log}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d\,f-e\,f\,x}}\right]}{d\,e}$$

Result (type 8, 47 leaves):

$$\int\frac{a+b\,F^{\frac{c\sqrt{d+e\,x}}{\sqrt{d\,f-e\,f\,x}}}}{d^2-e^2\,x^2}\,dx$$

Problem 567: Unable to integrate problem.

$$\int\frac{a^x\,b^x}{x^2}\,dx$$

Optimal (type 4, 26 leaves, 3 steps):

$$-\frac{a^x\,b^x}{x}+\text{ExpIntegralEi}\left[x\,\left(\text{Log}[a]+\text{Log}[b]\right)\right]\,\left(\text{Log}[a]+\text{Log}[b]\right)$$

Result (type 8, 12 leaves):

$$\int\frac{a^x\,b^x}{x^2}\,dx$$

Problem 568: Unable to integrate problem.

$$\int\frac{a^x\,b^x}{x^3}\,dx$$

Optimal (type 4, 51 leaves, 4 steps):

$$-\frac{a^x\,b^x}{2\,x^2}-\frac{a^x\,b^x\,\left(\text{Log}[a]+\text{Log}[b]\right)}{2\,x}+\frac{1}{2}\,\text{ExpIntegralEi}\left[x\,\left(\text{Log}[a]+\text{Log}[b]\right)\right]\,\left(\text{Log}[a]+\text{Log}[b]\right)^2$$

Result (type 8, 12 leaves):

$$\int\frac{a^x\,b^x}{x^3}\,dx$$

Problem 572: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(d+e\,e^{h+i\,x}\right)\,\left(f+g\,x\right)^3}{a+b\,e^{h+i\,x}+c\,e^{2\,h+2\,i\,x}}\,dx$$

Optimal (type 4, 770 leaves, 13 steps):

$$\frac{\left(e-\frac{2 c d-b e}{\sqrt{b^2-4 a c}}\right) (f+g x)^4}{4 \left(b+\sqrt{b^2-4 a c}\right) g}+\frac{\left(e+\frac{2 c d-b e}{\sqrt{b^2-4 a c}}\right) (f+g x)^4}{4 \left(b-\sqrt{b^2-4 a c}\right) g}-$$

$$\frac{\left(e+\frac{2 c d-b e}{\sqrt{b^2-4 a c}}\right) (f+g x)^3 \text{Log}\left[1+\frac{2 c e^{h+i x}}{b-\sqrt{b^2-4 a c}}\right]}{\left(b-\sqrt{b^2-4 a c}\right) i}-\frac{\left(e-\frac{2 c d-b e}{\sqrt{b^2-4 a c}}\right) (f+g x)^3 \text{Log}\left[1+\frac{2 c e^{h+i x}}{b+\sqrt{b^2-4 a c}}\right]}{\left(b+\sqrt{b^2-4 a c}\right) i}-$$

$$\frac{3 \left(e+\frac{2 c d-b e}{\sqrt{b^2-4 a c}}\right) g (f+g x)^2 \text{PolyLog}\left[2,-\frac{2 c e^{h+i x}}{b-\sqrt{b^2-4 a c}}\right]}{\left(b-\sqrt{b^2-4 a c}\right) i^2}-$$

$$\frac{3 \left(e-\frac{2 c d-b e}{\sqrt{b^2-4 a c}}\right) g (f+g x)^2 \text{PolyLog}\left[2,-\frac{2 c e^{h+i x}}{b+\sqrt{b^2-4 a c}}\right]}{\left(b+\sqrt{b^2-4 a c}\right) i^2}+$$

$$\frac{6 \left(e+\frac{2 c d-b e}{\sqrt{b^2-4 a c}}\right) g^2 (f+g x) \text{PolyLog}\left[3,-\frac{2 c e^{h+i x}}{b-\sqrt{b^2-4 a c}}\right]}{\left(b-\sqrt{b^2-4 a c}\right) i^3}+$$

$$\frac{6 \left(e-\frac{2 c d-b e}{\sqrt{b^2-4 a c}}\right) g^2 (f+g x) \text{PolyLog}\left[3,-\frac{2 c e^{h+i x}}{b+\sqrt{b^2-4 a c}}\right]}{\left(b+\sqrt{b^2-4 a c}\right) i^3}-$$

$$\frac{6 \left(e+\frac{2 c d-b e}{\sqrt{b^2-4 a c}}\right) g^3 \text{PolyLog}\left[4,-\frac{2 c e^{h+i x}}{b-\sqrt{b^2-4 a c}}\right]}{\left(b-\sqrt{b^2-4 a c}\right) i^4}-\frac{6 \left(e-\frac{2 c d-b e}{\sqrt{b^2-4 a c}}\right) g^3 \text{PolyLog}\left[4,-\frac{2 c e^{h+i x}}{b+\sqrt{b^2-4 a c}}\right]}{\left(b+\sqrt{b^2-4 a c}\right) i^4}$$

Result (type 4, 3479 leaves) :

$$\frac{2 e f^3 \text{ArcTan}\left[\frac{b+2 c e^{h+i x}}{\sqrt{-b^2+4 a c}}\right]}{\sqrt{-b^2+4 a c}\ i}-\frac{d f^3 \left(-2 x+\frac{2 b \text{ArcTan}\left[\frac{b+2 c e^{h+i x}}{\sqrt{-b^2+4 a c}}\right]}{\sqrt{-b^2+4 a c}\ i}+\frac{\text{Log}\left[a+e^{h+i x} \left(b+c e^{h+i x}\right)\right]}{i}\right)}{2 a}+$$

$$3 d f^2 g \left(-\frac{2 e^{-h} \left(\frac{x^2}{2 \left(b-\sqrt{b^2-4 a c}\right)}-\frac{x \text{Log}\left[1+\frac{2 c e^{h+i x}}{b-\sqrt{b^2-4 a c}}\right]}{\left(b-\sqrt{b^2-4 a c}\right) i}-\frac{\text{PolyLog}\left[2,-\frac{2 c e^{h+i x}}{b-\sqrt{b^2-4 a c}}\right]}{\left(b-\sqrt{b^2-4 a c}\right) i^2}\right)}{\frac{-b e^{-h}-\sqrt{b^2-4 a c}\ e^{-h}}{2 c}-\frac{-b e^{-h}+\sqrt{b^2-4 a c}\ e^{-h}}{2 c}}+\right.$$

$$\frac{2\,e^{-h}\left(\frac{x^2}{2\left(b+\sqrt{b^2-4\,a\,c}\right)}-\frac{x\,\text{Log}\left[1+\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,i}-\frac{\text{PolyLog}\left[2,-\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,i^2}\right)}{\frac{-b\,e^{-h}-\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}-\frac{-b\,e^{-h}+\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}}\Bigg)+$$

$$3\,e\,f^2\,g\Bigg(-\Bigg(\Bigg(\left(-b\,e^{-h}+\sqrt{b^2-4\,a\,c}\;e^{-h}\right)$$

$$\left(\frac{x^2}{2\left(b-\sqrt{b^2-4\,a\,c}\right)}-\frac{x\,\text{Log}\left[1+\frac{2\,c\,e^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,i}-\frac{\text{PolyLog}\left[2,-\frac{2\,c\,e^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,i^2}\right)\Bigg)\Bigg/$$

$$\left(c\left(\frac{-b\,e^{-h}-\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}-\frac{-b\,e^{-h}+\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}\right)\right)\Bigg)+\Bigg(\left(-b\,e^{-h}-\sqrt{b^2-4\,a\,c}\;e^{-h}\right)$$

$$\left(\frac{x^2}{2\left(b+\sqrt{b^2-4\,a\,c}\right)}-\frac{x\,\text{Log}\left[1+\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,i}-\frac{\text{PolyLog}\left[2,-\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,i^2}\right)\Bigg)\Bigg/$$

$$\left(c\left(\frac{-b\,e^{-h}-\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}-\frac{-b\,e^{-h}+\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}\right)\right)\Bigg)+$$

$$3\,d\,f\,g^2\Bigg(-\Bigg(\Bigg(2\,e^{-h}\Bigg(\frac{x^3}{3\left(b-\sqrt{b^2-4\,a\,c}\right)}-\frac{x^2\,\text{Log}\left[1+\frac{2\,c\,e^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,i}-\frac{2\,x\,\text{PolyLog}\left[2,-\frac{2\,c\,e^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,i^2}+$$

$$\frac{2\,\text{PolyLog}\left[3,-\frac{2\,c\,e^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,i^3}\Bigg)\Bigg)\Bigg/\left(\frac{-b\,e^{-h}-\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}-\frac{-b\,e^{-h}+\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}\right)\Bigg)+$$

$$\Bigg(2\,e^{-h}\Bigg(\frac{x^3}{3\left(b+\sqrt{b^2-4\,a\,c}\right)}-\frac{x^2\,\text{Log}\left[1+\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,i}-\frac{2\,x\,\text{PolyLog}\left[2,-\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,i^2}+$$

$$\frac{2\,\text{PolyLog}\left[3,-\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,i^3}\Bigg)\Bigg)\Bigg/\left(\frac{-b\,e^{-h}-\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}-\frac{-b\,e^{-h}+\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}\right)\Bigg)+$$

$$3\,e\,f\,g^2\left(-\left(\left(\left(-b\,\mathrm{e}^{-h}+\sqrt{b^2-4\,a\,c}\;\mathrm{e}^{-h}\right)\left(\frac{x^3}{3\left(b-\sqrt{b^2-4\,a\,c}\right)}-\frac{x^2\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+\mathrm{i}\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,\mathrm{i}}-\right.\right.\right.\right.$$

$$\left.\left.\frac{2\,x\,\mathrm{PolyLog}\left[2,-\frac{2\,c\,\mathrm{e}^{h+\mathrm{i}\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,\mathrm{i}^2}+\frac{2\,\mathrm{PolyLog}\left[3,-\frac{2\,c\,\mathrm{e}^{h+\mathrm{i}\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,\mathrm{i}^3}\right)\right)\Big/$$

$$\left.\left(c\left(\frac{-b\,\mathrm{e}^{-h}-\sqrt{b^2-4\,a\,c}\;\mathrm{e}^{-h}}{2\,c}-\frac{-b\,\mathrm{e}^{-h}+\sqrt{b^2-4\,a\,c}\;\mathrm{e}^{-h}}{2\,c}\right)\right)\right)+$$

$$\left(\left(-b\,\mathrm{e}^{-h}-\sqrt{b^2-4\,a\,c}\;\mathrm{e}^{-h}\right)\left(\frac{x^3}{3\left(b+\sqrt{b^2-4\,a\,c}\right)}-\frac{x^2\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+\mathrm{i}\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,\mathrm{i}}-\right.\right.$$

$$\left.\left.\frac{2\,x\,\mathrm{PolyLog}\left[2,-\frac{2\,c\,\mathrm{e}^{h+\mathrm{i}\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,\mathrm{i}^2}+\frac{2\,\mathrm{PolyLog}\left[3,-\frac{2\,c\,\mathrm{e}^{h+\mathrm{i}\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,\mathrm{i}^3}\right)\right)\Big/$$

$$\left.\left(c\left(\frac{-b\,\mathrm{e}^{-h}-\sqrt{b^2-4\,a\,c}\;\mathrm{e}^{-h}}{2\,c}-\frac{-b\,\mathrm{e}^{-h}+\sqrt{b^2-4\,a\,c}\;\mathrm{e}^{-h}}{2\,c}\right)\right)\right)+$$

$$d\,g^3\left(-\left(\left(2\,\mathrm{e}^{-h}\left(\frac{x^4}{4\left(b-\sqrt{b^2-4\,a\,c}\right)}-\frac{x^3\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+\mathrm{i}\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,\mathrm{i}}-\frac{3\,x^2\,\mathrm{PolyLog}\left[2,-\frac{2\,c\,\mathrm{e}^{h+\mathrm{i}\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,\mathrm{i}^2}+\right.\right.\right.\right.$$

$$\left.\left.\frac{6\,x\,\mathrm{PolyLog}\left[3,-\frac{2\,c\,\mathrm{e}^{h+\mathrm{i}\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,\mathrm{i}^3}-\frac{6\,\mathrm{PolyLog}\left[4,-\frac{2\,c\,\mathrm{e}^{h+\mathrm{i}\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,\mathrm{i}^4}\right)\right)\Big/$$

$$\left.\left(\frac{-b\,\mathrm{e}^{-h}-\sqrt{b^2-4\,a\,c}\;\mathrm{e}^{-h}}{2\,c}-\frac{-b\,\mathrm{e}^{-h}+\sqrt{b^2-4\,a\,c}\;\mathrm{e}^{-h}}{2\,c}\right)\right)+$$

$$\left(2\,\mathrm{e}^{-h}\left(\frac{x^4}{4\left(b+\sqrt{b^2-4\,a\,c}\right)}-\frac{x^3\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+\mathrm{i}\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,\mathrm{i}}-\frac{3\,x^2\,\mathrm{PolyLog}\left[2,-\frac{2\,c\,\mathrm{e}^{h+\mathrm{i}\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,\mathrm{i}^2}+\right.\right.$$

$$\left.\left.\frac{6\,x\,\mathrm{PolyLog}\left[3,-\frac{2\,c\,\mathrm{e}^{h+\mathrm{i}\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,\mathrm{i}^3}-\frac{6\,\mathrm{PolyLog}\left[4,-\frac{2\,c\,\mathrm{e}^{h+\mathrm{i}\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,\mathrm{i}^4}\right)\right)\Big/$$

$$\left(\frac{-b\,e^{-h}-\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}-\frac{-b\,e^{-h}+\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}\right)\Bigg)+$$

$$e\,g^3\left(-\left(\left(\left(-b\,e^{-h}+\sqrt{b^2-4\,a\,c}\;e^{-h}\right)\left(\frac{x^4}{4\left(b-\sqrt{b^2-4\,a\,c}\right)}-\right.\right.\right.\right.$$

$$\frac{x^3\,\text{Log}\left[1+\frac{2\,c\,e^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,i}-\frac{3\,x^2\,\text{PolyLog}\left[2,-\frac{2\,c\,e^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,i^2}+$$

$$\left.\left.\frac{6\,x\,\text{PolyLog}\left[3,-\frac{2\,c\,e^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,i^3}-\frac{6\,\text{PolyLog}\left[4,-\frac{2\,c\,e^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]}{\left(b-\sqrt{b^2-4\,a\,c}\right)\,i^4}\right)\right)\Bigg/$$

$$\left(c\left(\frac{-b\,e^{-h}-\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}-\frac{-b\,e^{-h}+\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}\right)\right)\Bigg)+\left(\left(-b\,e^{-h}-\sqrt{b^2-4\,a\,c}\;e^{-h}\right)\right.$$

$$\left(\frac{x^4}{4\left(b+\sqrt{b^2-4\,a\,c}\right)}-\frac{x^3\,\text{Log}\left[1+\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,i}-\frac{3\,x^2\,\text{PolyLog}\left[2,-\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,i^2}+\right.$$

$$\left.\left.\frac{6\,x\,\text{PolyLog}\left[3,-\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,i^3}-\frac{6\,\text{PolyLog}\left[4,-\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,i^4}\right)\right)\Bigg/$$

$$\left(c\left(\frac{-b\,e^{-h}-\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}-\frac{-b\,e^{-h}+\sqrt{b^2-4\,a\,c}\;e^{-h}}{2\,c}\right)\right)\Bigg)$$

Problem 573: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(d+e\,e^{h+i\,x}\right)\,\left(f+g\,x\right)^2}{a+b\,e^{h+i\,x}+c\,e^{2\,h+2\,i\,x}}\,dx$$

Optimal (type 4, 599 leaves, 11 steps):

$$\frac{\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)(f+gx)^3}{3\left(b+\sqrt{b^2-4ac}\right)g}+\frac{\left(e+\frac{2cd-be}{\sqrt{b^2-4ac}}\right)(f+gx)^3}{3\left(b-\sqrt{b^2-4ac}\right)g}-\frac{\left(e+\frac{2cd-be}{\sqrt{b^2-4ac}}\right)(f+gx)^2\,\text{Log}\left[1+\frac{2c\,e^{h+ix}}{b-\sqrt{b^2-4ac}}\right]}{\left(b-\sqrt{b^2-4ac}\right)i}-$$

$$\frac{\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)(f+gx)^2\,\text{Log}\left[1+\frac{2c\,e^{h+ix}}{b+\sqrt{b^2-4ac}}\right]}{\left(b+\sqrt{b^2-4ac}\right)i}-\frac{2\left(e+\frac{2cd-be}{\sqrt{b^2-4ac}}\right)g(f+gx)\,\text{PolyLog}\left[2,-\frac{2c\,e^{h+ix}}{b-\sqrt{b^2-4ac}}\right]}{\left(b-\sqrt{b^2-4ac}\right)i^2}-$$

$$\frac{2\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)g(f+gx)\,\text{PolyLog}\left[2,-\frac{2c\,e^{h+ix}}{b+\sqrt{b^2-4ac}}\right]}{\left(b+\sqrt{b^2-4ac}\right)i^2}+$$

$$\frac{2\left(e+\frac{2cd-be}{\sqrt{b^2-4ac}}\right)g^2\,\text{PolyLog}\left[3,-\frac{2c\,e^{h+ix}}{b-\sqrt{b^2-4ac}}\right]}{\left(b-\sqrt{b^2-4ac}\right)i^3}+\frac{2\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)g^2\,\text{PolyLog}\left[3,-\frac{2c\,e^{h+ix}}{b+\sqrt{b^2-4ac}}\right]}{\left(b+\sqrt{b^2-4ac}\right)i^3}$$

Result (type 4, 1412 leaves):

$$-\frac{1}{6a\sqrt{-(b^2-4ac)^2}\,i^3}$$

$$\Bigg(-6\sqrt{-(b^2-4ac)^2}\,d\,f^2\,i^3\,x-6\sqrt{-(b^2-4ac)^2}\,d\,f\,g\,i^3\,x^2-2\sqrt{-(b^2-4ac)^2}\,d\,g^2\,i^3\,x^3+$$

$$6b\sqrt{b^2-4ac}\,d\,f^2\,i^2\,\text{ArcTan}\left[\frac{b+2c\,e^{h+ix}}{\sqrt{-b^2+4ac}}\right]-12a\sqrt{b^2-4ac}\,e\,f^2\,i^2\,\text{ArcTan}\left[\frac{b+2c\,e^{h+ix}}{\sqrt{-b^2+4ac}}\right]+$$

$$6\sqrt{-(b^2-4ac)^2}\,d\,f\,g\,i^2\,x\,\text{Log}\left[1+\frac{2c\,e^{h+ix}}{b-\sqrt{b^2-4ac}}\right]+$$

$$6b\sqrt{-b^2+4ac}\,d\,f\,g\,i^2\,x\,\text{Log}\left[1+\frac{2c\,e^{h+ix}}{b-\sqrt{b^2-4ac}}\right]-12a\sqrt{-b^2+4ac}\,e\,f\,g\,i^2\,x$$

$$\text{Log}\left[1+\frac{2c\,e^{h+ix}}{b-\sqrt{b^2-4ac}}\right]+3\sqrt{-(b^2-4ac)^2}\,d\,g^2\,i^2\,x^2\,\text{Log}\left[1+\frac{2c\,e^{h+ix}}{b-\sqrt{b^2-4ac}}\right]+$$

$$3b\sqrt{-b^2+4ac}\,d\,g^2\,i^2\,x^2\,\text{Log}\left[1+\frac{2c\,e^{h+ix}}{b-\sqrt{b^2-4ac}}\right]-6a\sqrt{-b^2+4ac}\,e\,g^2\,i^2\,x^2$$

$$\text{Log}\left[1+\frac{2c\,e^{h+ix}}{b-\sqrt{b^2-4ac}}\right]+6\sqrt{-(b^2-4ac)^2}\,d\,f\,g\,i^2\,x\,\text{Log}\left[1+\frac{2c\,e^{h+ix}}{b+\sqrt{b^2-4ac}}\right]-$$

$$6b\sqrt{-b^2+4ac}\,d\,f\,g\,i^2\,x\,\text{Log}\left[1+\frac{2c\,e^{h+ix}}{b+\sqrt{b^2-4ac}}\right]+12a\sqrt{-b^2+4ac}\,e\,f\,g\,i^2\,x$$

$$\text{Log}\left[1+\frac{2c\,e^{h+ix}}{b+\sqrt{b^2-4ac}}\right]+3\sqrt{-(b^2-4ac)^2}\,d\,g^2\,i^2\,x^2\,\text{Log}\left[1+\frac{2c\,e^{h+ix}}{b+\sqrt{b^2-4ac}}\right]-$$

$$3b\sqrt{-b^2+4ac}\,d\,g^2\,i^2\,x^2\,\text{Log}\left[1+\frac{2c\,e^{h+ix}}{b+\sqrt{b^2-4ac}}\right]+6a\sqrt{-b^2+4ac}\,e\,g^2\,i^2\,x^2$$

$$\text{Log}\left[1+\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]+3\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d\,f^2\,i^2\,\text{Log}\left[a+e^{h+i\,x}\left(b+c\,e^{h+i\,x}\right)\right]+$$

$$6\left(\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d+b\sqrt{-b^2+4\,a\,c}\;d-2\,a\sqrt{-b^2+4\,a\,c}\;e\right)g\,i\,\left(f+g\,x\right)$$

$$\text{PolyLog}\left[2,\frac{2\,c\,e^{h+i\,x}}{-b+\sqrt{b^2-4\,a\,c}}\right]+6\left(\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d-b\sqrt{-b^2+4\,a\,c}\;d+2\,a\sqrt{-b^2+4\,a\,c}\;e\right)$$

$$g\,i\,\left(f+g\,x\right)\,\text{PolyLog}\left[2,-\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]-$$

$$6\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d\,g^2\,\text{PolyLog}\left[3,\frac{2\,c\,e^{h+i\,x}}{-b+\sqrt{b^2-4\,a\,c}}\right]-6\,b\sqrt{-b^2+4\,a\,c}\;d\,g^2$$

$$\text{PolyLog}\left[3,\frac{2\,c\,e^{h+i\,x}}{-b+\sqrt{b^2-4\,a\,c}}\right]+12\,a\sqrt{-b^2+4\,a\,c}\;e\,g^2\,\text{PolyLog}\left[3,\frac{2\,c\,e^{h+i\,x}}{-b+\sqrt{b^2-4\,a\,c}}\right]-$$

$$6\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d\,g^2\,\text{PolyLog}\left[3,-\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]+6\,b\sqrt{-b^2+4\,a\,c}\;d\,g^2$$

$$\left.\text{PolyLog}\left[3,-\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]-12\,a\sqrt{-b^2+4\,a\,c}\;e\,g^2\,\text{PolyLog}\left[3,-\frac{2\,c\,e^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]\right)$$

Problem 579: Unable to integrate problem.

$$\int F^{a+b\,\text{Log}\left[c+d\,x^n\right]}\,x^2\,dx$$

Optimal (type 5, 65 leaves, 4 steps):

$$\frac{1}{3}\,F^a\,x^3\,\left(c+d\,x^n\right)^{b\,\text{Log}[F]}\left(1+\frac{d\,x^n}{c}\right)^{-b\,\text{Log}[F]}\,\text{Hypergeometric2F1}\left[\frac{3}{n},-b\,\text{Log}[F],\frac{3+n}{n},-\frac{d\,x^n}{c}\right]$$

Result (type 8, 20 leaves):

$$\int F^{a+b\,\text{Log}\left[c+d\,x^n\right]}\,x^2\,dx$$

Problem 580: Unable to integrate problem.

$$\int F^{a+b\,\text{Log}\left[c+d\,x^n\right]}\,x\,dx$$

Optimal (type 5, 65 leaves, 4 steps):

$$\frac{1}{2}\,F^a\,x^2\,\left(c+d\,x^n\right)^{b\,\text{Log}[F]}\left(1+\frac{d\,x^n}{c}\right)^{-b\,\text{Log}[F]}\,\text{Hypergeometric2F1}\left[\frac{2}{n},-b\,\text{Log}[F],\frac{2+n}{n},-\frac{d\,x^n}{c}\right]$$

Result (type 8, 18 leaves):

$$\int F^{a+b\,\text{Log}\left[c+d\,x^n\right]}\,x\,dx$$

Problem 581: Unable to integrate problem.

$$\int F^{a+b\,\text{Log}\left[c+d\,x^n\right]}\,dx$$

Optimal (type 5, 56 leaves, 4 steps):

$$F^a\,x\,\left(c+d\,x^n\right)^{b\,\text{Log}[F]}\,\left(1+\frac{d\,x^n}{c}\right)^{-b\,\text{Log}[F]}\,\text{Hypergeometric2F1}\left[\frac{1}{n},\,-b\,\text{Log}[F],\,1+\frac{1}{n},\,-\frac{d\,x^n}{c}\right]$$

Result (type 8, 16 leaves):

$$\int F^{a+b\,\text{Log}\left[c+d\,x^n\right]}\,dx$$

Problem 583: Unable to integrate problem.

$$\int \frac{F^{a+b\,\text{Log}\left[c+d\,x^n\right]}}{x^2}\,dx$$

Optimal (type 5, 66 leaves, 4 steps):

$$-\frac{1}{x}F^a\,\left(c+d\,x^n\right)^{b\,\text{Log}[F]}\,\left(1+\frac{d\,x^n}{c}\right)^{-b\,\text{Log}[F]}\,\text{Hypergeometric2F1}\left[-\frac{1}{n},\,-b\,\text{Log}[F],\,-\frac{1-n}{n},\,-\frac{d\,x^n}{c}\right]$$

Result (type 8, 20 leaves):

$$\int \frac{F^{a+b\,\text{Log}\left[c+d\,x^n\right]}}{x^2}\,dx$$

Problem 584: Unable to integrate problem.

$$\int \frac{F^{a+b\,\text{Log}\left[c+d\,x^n\right]}}{x^3}\,dx$$

Optimal (type 5, 68 leaves, 4 steps):

$$-\frac{1}{2\,x^2}F^a\,\left(c+d\,x^n\right)^{b\,\text{Log}[F]}\,\left(1+\frac{d\,x^n}{c}\right)^{-b\,\text{Log}[F]}\,\text{Hypergeometric2F1}\left[-\frac{2}{n},\,-b\,\text{Log}[F],\,-\frac{2-n}{n},\,-\frac{d\,x^n}{c}\right]$$

Result (type 8, 20 leaves):

$$\int \frac{F^{a+b\,\text{Log}\left[c+d\,x^n\right]}}{x^3}\,dx$$

Problem 585: Unable to integrate problem.

$$\int F^{a+b\,\text{Log}\left[c+d\,x^n\right]}\,\left(d\,x\right)^m\,dx$$

Optimal (type 5, 77 leaves, 4 steps):

$$\frac{1}{d(1+m)}F^a (d x)^{1+m} (c+d x^n)^{b \text{Log}[F]} \left(1+\frac{d x^n}{c}\right)^{-b \text{Log}[F]} \text{Hypergeometric2F1}\left[\frac{1+m}{n}, -b \text{Log}[F], \frac{1+m+n}{n}, -\frac{d x^n}{c}\right]$$

Result (type 8, 22 leaves) :

$$\int F^{a+b \text{Log}[c+d x^n]} (d x)^m \, dx$$

Problem 586: Unable to integrate problem.

$$\int e^{\text{Log}[(d+e x)^n]^2} (d+e x)^m \, dx$$

Optimal (type 4, 76 leaves, 3 steps) :

$$\frac{e^{-\frac{(1+m)^2}{4 n^2}} \sqrt{\pi} (d+e x)^{1+m} \left((d+e x)^n\right)^{-\frac{1+m}{n}} \text{Erfi}\left[\frac{1+m+2 n \text{Log}[(d+e x)^n]}{2 n}\right]}{2 e n}$$

Result (type 8, 22 leaves) :

$$\int e^{\text{Log}[(d+e x)^n]^2} (d+e x)^m \, dx$$

Problem 587: Unable to integrate problem.

$$\int F^{f (a+b \text{Log}[c (d+e x)^n]^2)} (d g+e g x)^m \, dx$$

Optimal (type 4, 137 leaves, 3 steps) :

$$\left(e^{-\frac{(1+m)^2}{4 b f n^2 \text{Log}[F]}} F^{a f} \sqrt{\pi} \left(c (d+e x)^n\right)^{-\frac{1+m}{n}} (d g+e g x)^{1+m} \text{Erfi}\left[\frac{1+m+2 b f n \text{Log}[F] \text{Log}[c (d+e x)^n]}{2 \sqrt{b} \sqrt{f} n \sqrt{\text{Log}[F]}}\right]\right) \Big/ \left(2 \sqrt{b} e \sqrt{f} g n \sqrt{\text{Log}[F]}\right)$$

Result (type 8, 33 leaves) :

$$\int F^{f (a+b \text{Log}[c (d+e x)^n]^2)} (d g+e g x)^m \, dx$$

Problem 602: Unable to integrate problem.

$$\int F^{f (a+b \text{Log}[c (d+e x)^n])^2} (d g+e g x)^m \, dx$$

Optimal (type 4, 153 leaves, 4 steps) :

$$\left(e^{-\frac{(1+m+2 a b f n \text{Log}[F])^2}{4 b^2 f n^2 \text{Log}[F]}} F^{a^2 f} \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{-\frac{1+m}{n}} (d g+e g x)^m \text{Erfi}\left[\frac{1+m+2 a b f n \text{Log}[F]+2 b^2 f n \text{Log}[F] \text{Log}\left[c (d+e x)^n\right]}{2 b \sqrt{f} n \sqrt{\text{Log}[F]}}\right]\right) \Big/ \left(2 b e \sqrt{f} n \sqrt{\text{Log}[F]}\right)$$

Result (type 8, 33 leaves):

$$\int F^{f \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2} (d g+e g x)^m \, dx$$

Problem 619: Unable to integrate problem.

$$\int e^{a+b x+c x^2} (b+2 c x) \left(a+b x+c x^2\right)^m \, dx$$

Optimal (type 4, 49 leaves, 2 steps):

$$\left(-a-b x-c x^2\right)^{-m} \left(a+b x+c x^2\right)^m \text{Gamma}\left[1+m, -a-b x-c x^2\right]$$

Result (type 8, 33 leaves):

$$\int e^{a+b x+c x^2} (b+2 c x) \left(a+b x+c x^2\right)^m \, dx$$

Problem 636: Result more than twice size of optimal antiderivative.

$$\int \frac{e^{-x}}{\sqrt{1-e^{-2 x}}} \, dx$$

Optimal (type 3, 8 leaves, 2 steps):

$$-\text{ArcSin}\left[e^{-x}\right]$$

Result (type 3, 42 leaves):

$$\frac{e^{-x} \sqrt{-1+e^{2 x}} \text{ArcTan}\left[\sqrt{-1+e^{2 x}}\right]}{\sqrt{1-e^{-2 x}}}$$

Problem 638: Result more than twice size of optimal antiderivative.

$$\int \frac{e^x}{1-e^{2 x}} \, dx$$

Optimal (type 3, 4 leaves, 2 steps):

$$\text{ArcTanh}\left[e^x\right]$$

Result (type 3, 23 leaves):

$$-\frac{1}{2} \text{Log}\left[1-e^x\right]+\frac{1}{2} \text{Log}\left[1+e^x\right]$$

Problem 652: Result more than twice size of optimal antiderivative.

$$\int \frac{e^x}{-1+e^{2x}}\,dx$$

Optimal (type 3, 6 leaves, 2 steps):

$$-\text{ArcTanh}\left[e^x\right]$$

Result (type 3, 23 leaves):

$$\frac{1}{2}\text{Log}\left[1-e^x\right]-\frac{1}{2}\text{Log}\left[1+e^x\right]$$

Problem 681: Result more than twice size of optimal antiderivative.

$$\int e^x\,\text{Sech}\left[e^x\right]\,dx$$

Optimal (type 3, 5 leaves, 2 steps):

$$\text{ArcTan}\left[\text{Sinh}\left[e^x\right]\right]$$

Result (type 3, 11 leaves):

$$2\,\text{ArcTan}\left[\text{Tanh}\left[\frac{e^x}{2}\right]\right]$$

Problem 684: Result more than twice size of optimal antiderivative.

$$\int e^x\,\text{Sec}\left[1-e^x\right]^3\,dx$$

Optimal (type 3, 34 leaves, 3 steps):

$$-\frac{1}{2}\text{ArcTanh}\left[\text{Sin}\left[1-e^x\right]\right]-\frac{1}{2}\text{Sec}\left[1-e^x\right]\,\text{Tan}\left[1-e^x\right]$$

Result (type 3, 79 leaves):

$$\frac{1}{2}\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}\left(1-e^x\right)\right]-\text{Sin}\left[\frac{1}{2}\left(1-e^x\right)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\left(1-e^x\right)\right]+\text{Sin}\left[\frac{1}{2}\left(1-e^x\right)\right]\right]-\text{Sec}\left[1-e^x\right]\,\text{Tan}\left[1-e^x\right]\right)$$

Problem 704: Result more than twice size of optimal antiderivative.

$$\int \frac{e^{3x}}{-1+e^{2x}}\,dx$$

Optimal (type 3, 10 leaves, 3 steps):

$$e^x-\text{ArcTanh}\left[e^x\right]$$

Result (type 3, 26 leaves):

$$e^x + \frac{1}{2}\,\text{Log}\left[1 - e^x\right] - \frac{1}{2}\,\text{Log}\left[1 + e^x\right]$$

Problem 720: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{-e^{-x} + e^x}\,dx$$

Optimal (type 3, 6 leaves, 2 steps):

$$-\text{ArcTanh}\left[e^x\right]$$

Result (type 3, 23 leaves):

$$\frac{1}{2}\,\text{Log}\left[1 - e^x\right] - \frac{1}{2}\,\text{Log}\left[1 + e^x\right]$$

Problem 728: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{-e^x + e^{3x}}\,dx$$

Optimal (type 3, 12 leaves, 3 steps):

$$e^{-x} - \text{ArcTanh}\left[e^x\right]$$

Result (type 3, 32 leaves):

$$e^{-x} + \frac{1}{2}\,\text{Log}\left[1 - e^{-x}\right] - \frac{1}{2}\,\text{Log}\left[1 + e^{-x}\right]$$

Problem 767: Unable to integrate problem.

$$\int e^{a+c+b\,x^n+d\,x^n}\,dx$$

Optimal (type 4, 37 leaves, 2 steps):

$$-\frac{e^{a+c}\,x\,\left(-\left(b+d\right)\,x^n\right)^{-1/n}\,\text{Gamma}\left[\frac{1}{n},\,-\left(b+d\right)\,x^n\right]}{n}$$

Result (type 8, 17 leaves):

$$\int e^{a+c+b\,x^n+d\,x^n}\,dx$$

Problem 768: Unable to integrate problem.

$$\int f^{a+b\,x^n}\,g^{c+d\,x^n}\,dx$$

Optimal (type 4, 50 leaves, 2 steps):

$$-\frac{1}{n}f^a\,g^c\,x\,\text{Gamma}\left[\frac{1}{n},\,-x^n\,\left(b\,\text{Log}[f]+d\,\text{Log}[g]\right)\right]\,\left(-x^n\,\left(b\,\text{Log}[f]+d\,\text{Log}[g]\right)\right)^{-1/n}$$

Result (type 8, 21 leaves):

$$\int f^{a+b\,x^n}\,g^{c+d\,x^n}\,dx$$

Problem 771: Unable to integrate problem.

$$\int e^{(a+b\,x)^n}\,(a+b\,x)^m\,dx$$

Optimal (type 4, 52 leaves, 1 step):

$$-\frac{(a+b\,x)^{1+m}\left(-(a+b\,x)^n\right)^{-\frac{1+m}{n}}\,\text{Gamma}\left[\frac{1+m}{n},\,-(a+b\,x)^n\right]}{b\,n}$$

Result (type 8, 19 leaves):

$$\int e^{(a+b\,x)^n}\,(a+b\,x)^m\,dx$$

Problem 772: Unable to integrate problem.

$$\int f^{(a+b\,x)^n}\,(a+b\,x)^m\,dx$$

Optimal (type 4, 56 leaves, 1 step):

$$-\frac{1}{b\,n}(a+b\,x)^{1+m}\,\text{Gamma}\left[\frac{1+m}{n},\,-(a+b\,x)^n\,\text{Log}[f]\right]\left(-(a+b\,x)^n\,\text{Log}[f]\right)^{-\frac{1+m}{n}}$$

Result (type 8, 19 leaves):

$$\int f^{(a+b\,x)^n}\,(a+b\,x)^m\,dx$$

Problem 773: Unable to integrate problem.

$$\int e^{(a+b\,x)^3}\,x\,dx$$

Optimal (type 4, 80 leaves, 4 steps):

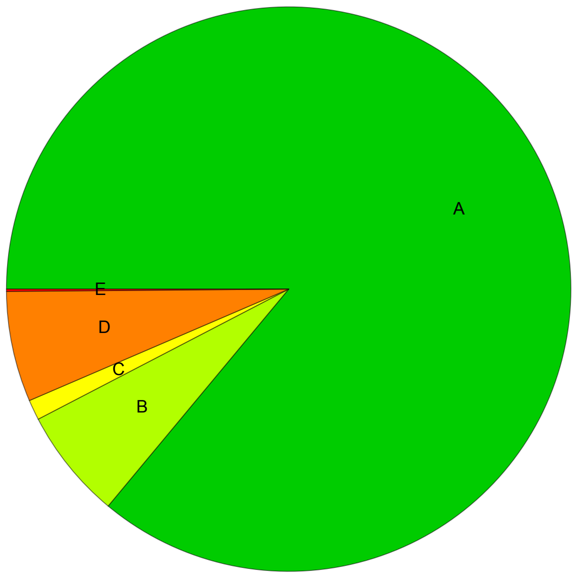
$$\frac{a\,(a+b\,x)\,\text{Gamma}\left[\frac{1}{3},\,-(a+b\,x)^3\right]}{3\,b^2\left(-(a+b\,x)^3\right)^{1/3}}-\frac{(a+b\,x)^2\,\text{Gamma}\left[\frac{2}{3},\,-(a+b\,x)^3\right]}{3\,b^2\left(-(a+b\,x)^3\right)^{2/3}}$$

Result (type 8, 13 leaves):

$$\int e^{(a+b\,x)^3}\,x\,dx$$

Summary of Integration Test Results

774 integration problems



A - 666 optimal antiderivatives

B - 49 more than twice size of optimal antiderivatives

C - 9 unnecessarily complex antiderivatives

D - 49 unable to integrate problems

E - 1 integration timeouts