Maple 2018.2 Integration Test Results
on the problems in "2 Exponentials"

Test results for the 27 problems in "2.1 u (F^(c (a+b x)))^n.txt"

Problem 1: Unable to integrate problem.

$$\int F^{c(bx+a)}(ex+d)^m\,dx$$

Optimal(type 4, 67 leaves, 1 step):

$$\frac{F^{c\left(a-\frac{bd}{e}\right)}(ex+d)^m\,\Gamma\left(1+m,-\frac{bc(ex+d)\ln(F)}{e}\right)}{bc\ln(F)\left(-\frac{bc(ex+d)\ln(F)}{e}\right)^m}$$

Result(type 8, 19 leaves):

$$\int F^{c(bx+a)}(ex+d)^m\,dx$$

Problem 9: Unable to integrate problem.

$$\int F^{c(bx+a)}\left((ex+d)^n\right)^m\,dx$$

Optimal(type 4, 73 leaves, 2 steps):

$$\frac{F^{c\left(a-\frac{bd}{e}\right)}\left((ex+d)^n\right)^m\,\Gamma\left(mn+1,-\frac{bc(ex+d)\ln(F)}{e}\right)}{bc\ln(F)\left(-\frac{bc(ex+d)\ln(F)}{e}\right)^{mn}}$$

Result(type 8, 21 leaves):

$$\int F^{c(bx+a)}\left((ex+d)^n\right)^m\,dx$$

Problem 10: Unable to integrate problem.

$$\int F^{c(bx+a)}(ex+d)^m\,dx$$

Optimal(type 4, 67 leaves, 1 step):

$$\frac{F^{c\left(a-\frac{bd}{e}\right)}(ex+d)^m\,\Gamma\left(1+m,-\frac{bc(ex+d)\ln(F)}{e}\right)}{bc\ln(F)\left(-\frac{bc(ex+d)\ln(F)}{e}\right)^m}$$

Result(type 8, 19 leaves):

$$\int F^{c(bx+a)}(ex+d)^m\,dx$$

Problem 13: Unable to integrate problem.

$$\int F^{c(bx+a)}(ex+d)^{7/2}\,dx$$

Optimal(type 4, 172 leaves, 6 steps):

$$\frac{35e^2F^{c(bx+a)}(ex+d)^{3/2}}{4b^3c^3\ln(F)^3}-\frac{7eF^{c(bx+a)}(ex+d)^{5/2}}{2b^2c^2\ln(F)^2}+\frac{F^{c(bx+a)}(ex+d)^{7/2}}{bc\ln(F)}+\frac{105e^{7/2}F^{c\left(a-\frac{bd}{e}\right)}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{c}\sqrt{ex+d}\sqrt{\ln(F)}}{\sqrt{e}}\right)\sqrt{\pi}}{16b^{9/2}c^{9/2}\ln(F)^{9/2}}$$
$$-\frac{105e^3F^{c(bx+a)}\sqrt{ex+d}}{8b^4c^4\ln(F)^4}$$

Result(type 8, 19 leaves):

$$\int F^{c(bx+a)}(ex+d)^{7/2}\,dx$$

Problem 14: Unable to integrate problem.

$$\int F^{c(bx+a)}(ex+d)^{3/2}\,dx$$

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

$$\frac{F^{c(bx+a)}(ex+d)^{3/2}}{bc\ln(F)}+\frac{3e^{3/2}F^{c\left(a-\frac{bd}{e}\right)}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{c}\sqrt{ex+d}\sqrt{\ln(F)}}{\sqrt{e}}\right)\sqrt{\pi}}{4b^{5/2}c^{5/2}\ln(F)^{5/2}}-\frac{3eF^{c(bx+a)}\sqrt{ex+d}}{2b^2c^2\ln(F)^2}$$

Result(type 8, 19 leaves):

$$\int F^{c(bx+a)}(ex+d)^{3/2}\,dx$$

Problem 15: Unable to integrate problem.

$$\int \frac{F^{c(bx+a)}}{(ex+d)^{5/2}}\,dx$$

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

$$-\frac{2F^{c(bx+a)}}{3e(ex+d)^{3/2}}+\frac{4b^{3/2}c^{3/2}F^{c\left(a-\frac{bd}{e}\right)}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{c}\sqrt{ex+d}\sqrt{\ln(F)}}{\sqrt{e}}\right)\ln(F)^{3/2}\sqrt{\pi}}{3e^{5/2}}-\frac{4bcF^{c(bx+a)}\ln(F)}{3e^2\sqrt{ex+d}}$$

Result(type 8, 19 leaves):

$$\int \frac{F^{c(bx+a)}}{(ex+d)^{5/2}}\, dx$$

Problem 16: Unable to integrate problem.

$$\int \frac{F^{c(bx+a)}}{(ex+d)^{9/2}}\, dx$$

Optimal(type 4, 162 leaves, 6 steps):

$$-\frac{2F^{c(bx+a)}}{7e(ex+d)^{7/2}} - \frac{4bcF^{c(bx+a)}\ln(F)}{35e^2(ex+d)^{5/2}} - \frac{8b^2c^2F^{c(bx+a)}\ln(F)^2}{105e^3(ex+d)^{3/2}} + \frac{16b^{7/2}c^{7/2}F^{c\left(a-\frac{bd}{e}\right)}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{c}\sqrt{ex+d}\sqrt{\ln(F)}}{\sqrt{e}}\right)\ln(F)^{7/2}\sqrt{\pi}}{105e^{9/2}} - \frac{16b^3c^3F^{c(bx+a)}\ln(F)^3}{105e^4\sqrt{ex+d}}$$

Result(type 8, 19 leaves):

$$\int \frac{F^{c(bx+a)}}{(ex+d)^{9/2}}\, dx$$

Problem 17: Unable to integrate problem.

$$\int F^{c(bx+a)}(ex+d)^{4/3}\, dx$$

Optimal(type 4, 65 leaves, 1 step):

$$-\frac{eF^{c\left(a-\frac{bd}{e}\right)}(ex+d)^{1/3}\Gamma\left(\frac{7}{3}, -\frac{bc(ex+d)\ln(F)}{e}\right)}{b^2c^2\ln(F)^2\left(-\frac{bc(ex+d)\ln(F)}{e}\right)^{1/3}}$$

Result(type 8, 19 leaves):

$$\int F^{c(bx+a)}(ex+d)^{4/3}\, dx$$

Problem 20: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 139 leaves, 5 steps):

$$\frac{f^2F^{bc+a}x^m\Gamma(3+m, -bdx\ln(F))}{b^3d^3\ln(F)^3(-bdx\ln(F))^m} - \frac{2efF^{bc+a}x^m\Gamma(2+m, -bdx\ln(F))}{b^2d^2\ln(F)^2(-bdx\ln(F))^m} + \frac{e^2F^{bc+a}x^m\Gamma(1+m, -bdx\ln(F))}{bd\ln(F)(-bdx\ln(F))^m}$$

Result(type 4, 432 leaves):

$$-\frac{1}{d^3 b^3}\left(\ln(F)^{-3-m}(-d b)^{-m} F^{b c+a} f^2 \left(x^m(-d b)^m \ln(F)^m m \left(m^2+3 m+2\right) \Gamma(m)(-b d x \ln(F))^{-m}-x^m(-d b)^m \ln(F)^m \left(b^2 d^2 x^2 \ln(F)^2-m b d x \ln(F)+m^2-2 b d x \ln(F)+3 m+2\right) \mathrm{e}^{b d x \ln(F)}-x^m(-d b)^m \ln(F)^m m \left(m^2+3 m+2\right)(-b d x \ln(F))^{-m} \Gamma(m,-b d x \ln(F))\right)\right)+\frac{1}{d^2 b^2}\left(2 \ln(F)^{-m-2}(-d b)^{-m} F^{b c+a} f e \left(x^m(-d b)^m \ln(F)^m(1+m) m \Gamma(m)(-b d x \ln(F))^{-m}+x^m(-d b)^m \ln(F)^m(b d x \ln(F)-m-1) \mathrm{e}^{b d x \ln(F)}-x^m(-d b)^m \ln(F)^m(1+m) m(-b d x \ln(F))^{-m} \Gamma(m,-b d x \ln(F))\right)\right)-\frac{1}{d b}\left(F^{b c+a}(-d b)^{-m} \ln(F)^{-m-1} e^2 \left(x^m(-d b)^m \ln(F)^m m \Gamma(m)(-b d x \ln(F))^{-m}-x^m(-d b)^m \ln(F)^m \mathrm{e}^{b d x \ln(F)}-x^m(-d b)^m \ln(F)^m m(-b d x \ln(F))^{-m} \Gamma(m,-b d x \ln(F))\right)\right)$$

Test results for the 27 problems in "2.2 (c+d x)^m (F^(g (e+f x)))^n (a+b (F^(g (e+f x)))^n)^p.txt"

Problem 2: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 54 leaves, 4 steps):

$$\frac{x^2}{2 a}-\frac{x \ln\left(1+\frac{b\,\mathrm{e}^{d x+c}}{a}\right)}{a d}-\frac{\operatorname{polylog}\left(2,-\frac{b\,\mathrm{e}^{d x+c}}{a}\right)}{a d^2}$$

Result(type 4, 132 leaves):

$$\frac{x^2}{2 a}+\frac{x c}{d a}+\frac{c^2}{2 d^2 a}-\frac{x \ln\left(1+\frac{b\,\mathrm{e}^{d x+c}}{a}\right)}{a d}-\frac{c \ln\left(1+\frac{b\,\mathrm{e}^{d x+c}}{a}\right)}{d^2 a}-\frac{\operatorname{polylog}\left(2,-\frac{b\,\mathrm{e}^{d x+c}}{a}\right)}{a d^2}-\frac{c \ln\left(\mathrm{e}^{d x+c}\right)}{d^2 a}+\frac{c \ln\left(a+b\,\mathrm{e}^{d x+c}\right)}{d^2 a}$$

Problem 4: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 157 leaves, 11 steps):

$$-\frac{x^2}{a^2 d}+\frac{x^2}{a d\left(a+b\,\mathrm{e}^{d x+c}\right)}+\frac{x^3}{3 a^2}+\frac{2 x \ln\left(1+\frac{b\,\mathrm{e}^{d x+c}}{a}\right)}{a^2 d^2}-\frac{x^2 \ln\left(1+\frac{b\,\mathrm{e}^{d x+c}}{a}\right)}{a^2 d}+\frac{2 \operatorname{polylog}\left(2,-\frac{b\,\mathrm{e}^{d x+c}}{a}\right)}{a^2 d^3}-\frac{2 x \operatorname{polylog}\left(2,-\frac{b\,\mathrm{e}^{d x+c}}{a}\right)}{a^2 d^2}+\frac{2 \operatorname{polylog}\left(3,-\frac{b\,\mathrm{e}^{d x+c}}{a}\right)}{a^2 d^3}$$

Result(type 4, 323 leaves):

$$\frac{x^2}{a d \left(a+b e^{d x+c}\right)}+\frac{c^2 \ln\left(e^{d x+c}\right)}{a^2 d^3}-\frac{c^2 \ln\left(a+b e^{d x+c}\right)}{a^2 d^3}+\frac{x^3}{3 a^2}-\frac{c^2 x}{a^2 d^2}-\frac{2 c^3}{3 a^2 d^3}-\frac{x^2 \ln\left(1+\frac{b e^{d x+c}}{a}\right)}{a^2 d}+\frac{\ln\left(1+\frac{b e^{d x+c}}{a}\right) c^2}{a^2 d^3}$$
$$-\frac{2 x \operatorname{polylog}\left(2,-\frac{b e^{d x+c}}{a}\right)}{a^2 d^2}+\frac{2 \operatorname{polylog}\left(3,-\frac{b e^{d x+c}}{a}\right)}{a^2 d^3}+\frac{2 c \ln\left(e^{d x+c}\right)}{a^2 d^3}-\frac{2 c \ln\left(a+b e^{d x+c}\right)}{a^2 d^3}-\frac{x^2}{a^2 d}-\frac{2 c x}{a^2 d^2}-\frac{c^2}{a^2 d^3}+\frac{2 x \ln\left(1+\frac{b e^{d x+c}}{a}\right)}{a^2 d^2}$$
$$+\frac{2 \ln\left(1+\frac{b e^{d x+c}}{a}\right) c}{a^2 d^3}+\frac{2 \operatorname{polylog}\left(2,-\frac{b e^{d x+c}}{a}\right)}{a^2 d^3}$$

Problem 9: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 143 leaves, 15 steps):

$$-\frac{1}{2 a^2 d^2 \left(a+b e^{d x+c}\right)}-\frac{3 x}{2 a^3 d}+\frac{x}{2 a d \left(a+b e^{d x+c}\right)^2}+\frac{x}{a^2 d \left(a+b e^{d x+c}\right)}+\frac{x^2}{2 a^3}+\frac{3 \ln\left(a+b e^{d x+c}\right)}{2 a^3 d^2}-\frac{x \ln\left(1+\frac{b e^{d x+c}}{a}\right)}{a^3 d}$$
$$-\frac{\operatorname{polylog}\left(2,-\frac{b e^{d x+c}}{a}\right)}{a^3 d^2}$$

Result(type 4, 392 leaves):

$$-\frac{1}{2 a^2 d^2 \left(a+b e^{d x+c}\right)}+\frac{3 \ln\left(a+b e^{d x+c}\right)}{2 a^3 d^2}-\frac{b^2 \left(e^{d x+c}\right)^2 x}{2 d a^3 \left(a+b e^{d x+c}\right)^2}-\frac{b^2 \left(e^{d x+c}\right)^2 c}{2 d^2 a^3 \left(a+b e^{d x+c}\right)^2}-\frac{b e^{d x+c} x}{d a^2 \left(a+b e^{d x+c}\right)^2}-\frac{b e^{d x+c} c}{d^2 a^2 \left(a+b e^{d x+c}\right)^2}+\frac{x^2}{2 a^3}$$
$$+\frac{x c}{d a^3}+\frac{c^2}{2 d^2 a^3}-\frac{b e^{d x+c} x}{d a^3 \left(a+b e^{d x+c}\right)}-\frac{b e^{d x+c} c}{d^2 a^3 \left(a+b e^{d x+c}\right)}-\frac{\operatorname{dilog}\left(\frac{a+b e^{d x+c}}{a}\right)}{d^2 a^3}-\frac{\ln\left(\frac{a+b e^{d x+c}}{a}\right) x}{d a^3}-\frac{\ln\left(\frac{a+b e^{d x+c}}{a}\right) c}{d^2 a^3}$$
$$-\frac{c \ln\left(e^{d x+c}\right)}{d^2 a^3}+\frac{c \ln\left(a+b e^{d x+c}\right)}{d^2 a^3}-\frac{c}{d^2 a^2 \left(a+b e^{d x+c}\right)}-\frac{c}{2 d^2 a \left(a+b e^{d x+c}\right)^2}$$

Problem 11: Unable to integrate problem.

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

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

$$\frac{b\,F^{\left(e-\frac{f c}{d}\right) g n-g n (f x+e)} \left(F^{f g x+e g}\right)^{n} \operatorname{Ei}\left(\frac{f g n (d x+c) \ln(F)}{d}\right)}{d}+\frac{a \ln(d x+c)}{d}$$

Result(type 8, 25 leaves):

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

Problem 13: Unable to integrate problem.

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

Optimal(type 3, 478 leaves, 14 steps):

$$\frac{a^{3} (d x+c)^{4}}{4 d}-\frac{18 a^{2} b d^{3} \left(F^{f g x+e g}\right)^{n}}{f^{4} g^{4} n^{4} \ln(F)^{4}}-\frac{9 a b^{2} d^{3} \left(F^{f g x+e g}\right)^{2 n}}{8 f^{4} g^{4} n^{4} \ln(F)^{4}}-\frac{2 b^{3} d^{3} \left(F^{f g x+e g}\right)^{3 n}}{27 f^{4} g^{4} n^{4} \ln(F)^{4}}+\frac{18 a^{2} b d^{2} \left(F^{f g x+e g}\right)^{n} (d x+c)}{f^{3} g^{3} n^{3} \ln(F)^{3}}$$
$$+\frac{9 a b^{2} d^{2} \left(F^{f g x+e g}\right)^{2 n} (d x+c)}{4 f^{3} g^{3} n^{3} \ln(F)^{3}}+\frac{2 b^{3} d^{2} \left(F^{f g x+e g}\right)^{3 n} (d x+c)}{9 f^{3} g^{3} n^{3} \ln(F)^{3}}-\frac{9 a^{2} b d \left(F^{f g x+e g}\right)^{n} (d x+c)^{2}}{f^{2} g^{2} n^{2} \ln(F)^{2}}-\frac{9 a b^{2} d \left(F^{f g x+e g}\right)^{2 n} (d x+c)^{2}}{4 f^{2} g^{2} n^{2} \ln(F)^{2}}$$
$$-\frac{b^{3} d \left(F^{f g x+e g}\right)^{3 n} (d x+c)^{2}}{3 f^{2} g^{2} n^{2} \ln(F)^{2}}+\frac{3 a^{2} b \left(F^{f g x+e g}\right)^{n} (d x+c)^{3}}{f g n \ln(F)}+\frac{3 a b^{2} \left(F^{f g x+e g}\right)^{2 n} (d x+c)^{3}}{2 f g n \ln(F)}+\frac{b^{3} \left(F^{f g x+e g}\right)^{3 n} (d x+c)^{3}}{3 f g n \ln(F)}$$

Result(type 8, 27 leaves):

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

Problem 14: Unable to integrate problem.

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

Optimal(type 3, 226 leaves, 8 steps):

$$\frac{a^{3} (d x+c)^{2}}{2 d}-\frac{3 a^{2} b d \left(F^{f g x+e g}\right)^{n}}{f^{2} g^{2} n^{2} \ln(F)^{2}}-\frac{3 a b^{2} d \left(F^{f g x+e g}\right)^{2 n}}{4 f^{2} g^{2} n^{2} \ln(F)^{2}}-\frac{b^{3} d \left(F^{f g x+e g}\right)^{3 n}}{9 f^{2} g^{2} n^{2} \ln(F)^{2}}+\frac{3 a^{2} b \left(F^{f g x+e g}\right)^{n} (d x+c)}{f g n \ln(F)}+\frac{3 a b^{2} \left(F^{f g x+e g}\right)^{2 n} (d x+c)}{2 f g n \ln(F)}$$
$$+\frac{b^{3} \left(F^{f g x+e g}\right)^{3 n} (d x+c)}{3 f g n \ln(F)}$$

Result(type 8, 25 leaves):

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

Problem 15: Unable to integrate problem.

$$\int \frac{\left(a+b\left(F^{g(fx+e)}\right)^n\right)^3}{(dx+c)^3}\,dx$$

Optimal(type 4, 431 leaves, 14 steps):

$$-\frac{a^3}{2d(dx+c)^2}-\frac{3a^2b\left(F^{fgx+eg}\right)^n}{2d(dx+c)^2}-\frac{3ab^2\left(F^{fgx+eg}\right)^{2n}}{2d(dx+c)^2}-\frac{b^3\left(F^{fgx+eg}\right)^{3n}}{2d(dx+c)^2}-\frac{3a^2bf\left(F^{fgx+eg}\right)^n gn\ln(F)}{2d^2(dx+c)}-\frac{3ab^2f\left(F^{fgx+eg}\right)^{2n}gn\ln(F)}{d^2(dx+c)}$$
$$-\frac{3b^3f\left(F^{fgx+eg}\right)^{3n}gn\ln(F)}{2d^2(dx+c)}+\frac{3a^2bf^2F^{\left(e-\frac{fc}{d}\right)gn-gn(fx+e)}\left(F^{fgx+eg}\right)^n g^2n^2\,\mathrm{Ei}\left(\frac{fgn(dx+c)\ln(F)}{d}\right)\ln(F)^2}{2d^3}$$
$$+\frac{6ab^2f^2F^{2\left(e-\frac{fc}{d}\right)gn-2gn(fx+e)}\left(F^{fgx+eg}\right)^{2n}g^2n^2\,\mathrm{Ei}\left(\frac{2fgn(dx+c)\ln(F)}{d}\right)\ln(F)^2}{d^3}$$
$$+\frac{9b^3f^2F^{3\left(e-\frac{fc}{d}\right)gn-3gn(fx+e)}\left(F^{fgx+eg}\right)^{3n}g^2n^2\,\mathrm{Ei}\left(\frac{3fgn(dx+c)\ln(F)}{d}\right)\ln(F)^2}{2d^3}$$

Result(type 8, 27 leaves):

$$\int \frac{\left(a+b\left(F^{g(fx+e)}\right)^n\right)^3}{(dx+c)^3}\,dx$$

Problem 16: Result more than twice size of optimal antiderivative.

$$\int \frac{(dx+c)^2}{a+b\left(F^{g(fx+e)}\right)^n}\,dx$$

Optimal(type 4, 143 leaves, 5 steps):

$$\frac{(dx+c)^3}{3ad}-\frac{(dx+c)^2\ln\left(1+\frac{b\left(F^{g(fx+e)}\right)^n}{a}\right)}{afgn\ln(F)}-\frac{2d(dx+c)\,\mathrm{polylog}\left(2,-\frac{b\left(F^{g(fx+e)}\right)^n}{a}\right)}{af^2g^2n^2\ln(F)^2}+\frac{2d^2\,\mathrm{polylog}\left(3,-\frac{b\left(F^{g(fx+e)}\right)^n}{a}\right)}{af^3g^3n^3\ln(F)^3}$$

Result(type 4, 1340 leaves):

$$-\frac{d^2\left(\ln\left(F^{g(fx+e)}\right)-g(fx+e)\ln(F)\right)^2\ln\left(a+b\left(F^{g(fx+e)}\right)^n\right)}{g^3f^3\ln(F)^3na}-\frac{d^2\ln\left(1+\frac{b\left(F^{g(fx+e)}\right)^n}{a}\right)x^2}{gf\ln(F)na}+\frac{d^2\ln\left(1+\frac{b\left(F^{g(fx+e)}\right)^n}{a}\right)e^2}{gf^3\ln(F)na}$$
$$+\frac{d^2\ln\left(1+\frac{b\left(F^{g(fx+e)}\right)^n}{a}\right)\left(\ln\left(F^{g(fx+e)}\right)-g(fx+e)\ln(F)\right)^2}{g^3f^3\ln(F)^3na}+\frac{2cd\left(\ln\left(F^{g(fx+e)}\right)-g(fx+e)\ln(F)\right)\ln\left(a+b\left(F^{g(fx+e)}\right)^n\right)}{g^2f^2\ln(F)^2na}$$
$$-\frac{2cde\ln\left(\left(F^{g(fx+e)}\right)^n\right)}{gf^2\ln(F)na}+\frac{2cde\ln\left(a+b\left(F^{g(fx+e)}\right)^n\right)}{gf^2\ln(F)na}+\frac{2d^2e\left(\ln\left(F^{g(fx+e)}\right)-g(fx+e)\ln(F)\right)\ln\left(\left(F^{g(fx+e)}\right)^n\right)}{g^2f^3\ln(F)^2na}$$

$$-\frac{2 d^2 e \left(\ln\left(F^{g (f x+e)}\right)-g (f x+e) \ln(F)\right) \ln\left(a+b \left(F^{g (f x+e)}\right)^n\right)}{g^2 f^3 \ln(F)^2 n a}-\frac{2 c d \left(\ln\left(F^{g (f x+e)}\right)-g (f x+e) \ln(F)\right) \ln\left(\left(F^{g (f x+e)}\right)^n\right)}{g^2 f^2 \ln(F)^2 n a}$$

$$-\frac{2 c d \ln\left(1+\frac{b \left(F^{g (f x+e)}\right)^n}{a}\right) e}{g f^2 \ln(F) n a}-\frac{2 c d \ln\left(1+\frac{b \left(F^{g (f x+e)}\right)^n}{a}\right) \left(\ln\left(F^{g (f x+e)}\right)-g (f x+e) \ln(F)\right)}{g^2 f^2 \ln(F)^2 n a}$$

$$+\frac{2 d^2 \ln\left(1+\frac{b \left(F^{g (f x+e)}\right)^n}{a}\right) e \left(\ln\left(F^{g (f x+e)}\right)-g (f x+e) \ln(F)\right)}{g^2 f^3 \ln(F)^2 n a}-\frac{2 c d \ln\left(F^{g (f x+e)}\right) x}{g f \ln(F) a}-\frac{2 d^2 \ln\left(F^{g (f x+e)}\right)^3}{3 g^3 f^3 \ln(F)^3 a}+\frac{2 c d x e}{f a}$$

$$-\frac{2 d^2 e x \left(\ln\left(F^{g (f x+e)}\right)-g (f x+e) \ln(F)\right)}{g f^2 \ln(F) a}-\frac{d^2 e^2 \ln\left(a+b \left(F^{g (f x+e)}\right)^n\right)}{g f^3 \ln(F) n a}+\frac{d^2 e^2 \ln\left(\left(F^{g (f x+e)}\right)^n\right)}{g f^3 \ln(F) n a}-\frac{2 d^2 \operatorname{polylog}\left(2,-\frac{b \left(F^{g (f x+e)}\right)^n}{a}\right) x}{g^2 f^2 \ln(F)^2 n^2 a}$$

$$-\frac{2 c d \operatorname{polylog}\left(2,-\frac{b \left(F^{g (f x+e)}\right)^n}{a}\right)}{g^2 f^2 \ln(F)^2 n^2 a}+\frac{d^2 \left(\ln\left(F^{g (f x+e)}\right)-g (f x+e) \ln(F)\right)^2 \ln\left(\left(F^{g (f x+e)}\right)^n\right)}{g^3 f^3 \ln(F)^3 n a}+\frac{2 c d x \left(\ln\left(F^{g (f x+e)}\right)-g (f x+e) \ln(F)\right)}{g f \ln(F) a}$$

$$+\frac{d^2 x^3}{a}+\frac{2 d^2 \operatorname{polylog}\left(3,-\frac{b \left(F^{g (f x+e)}\right)^n}{a}\right)}{a f^3 g^3 n^3 \ln(F)^3}-\frac{d^2 e^2 x}{f^2 a}+\frac{2 c d x^2}{a}-\frac{2 c d \ln\left(1+\frac{b \left(F^{g (f x+e)}\right)^n}{a}\right) x}{g f \ln(F) n a}+\frac{c d \ln\left(F^{g (f x+e)}\right)^2}{g^2 f^2 \ln(F)^2 a}-\frac{2 d^2 \ln\left(F^{g (f x+e)}\right) x^2}{g f \ln(F) a}$$

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

Problem 19: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 433 leaves, 24 steps):

$$\frac{(d x+c)^3}{3 a^3 d}+\frac{d^2 x}{a^3 f^2 g^2 n^2 \ln(F)^2}-\frac{d (d x+c)}{a^2 f^2 \left(a+b \left(F^{g (f x+e)}\right)^n\right) g^2 n^2 \ln(F)^2}-\frac{3 (d x+c)^2}{2 a^3 f g n \ln(F)}+\frac{(d x+c)^2}{2 a f \left(a+b \left(F^{g (f x+e)}\right)^n\right)^2 g n \ln(F)}$$

$$+\frac{(d x+c)^2}{a^2 f \left(a+b \left(F^{g (f x+e)}\right)^n\right) g n \ln(F)}-\frac{d^2 \ln\left(a+b \left(F^{g (f x+e)}\right)^n\right)}{a^3 f^3 g^3 n^3 \ln(F)^3}+\frac{3 d (d x+c) \ln\left(1+\frac{b \left(F^{g (f x+e)}\right)^n}{a}\right)}{a^3 f^2 g^2 n^2 \ln(F)^2}-\frac{(d x+c)^2 \ln\left(1+\frac{b \left(F^{g (f x+e)}\right)^n}{a}\right)}{a^3 f g n \ln(F)}$$

$$+\frac{3 d^2 \operatorname{polylog}\left(2,-\frac{b \left(F^{g (f x+e)}\right)^n}{a}\right)}{a^3 f^3 g^3 n^3 \ln(F)^3}-\frac{2 d (d x+c) \operatorname{polylog}\left(2,-\frac{b \left(F^{g (f x+e)}\right)^n}{a}\right)}{a^3 f^2 g^2 n^2 \ln(F)^2}+\frac{2 d^2 \operatorname{polylog}\left(3,-\frac{b \left(F^{g (f x+e)}\right)^n}{a}\right)}{a^3 f^3 g^3 n^3 \ln(F)^3}$$

Result(type 4, 1456 leaves):

$$-\frac{d^2 \ln\left(a+b\left(F^{g(fx+e)}\right)^n\right)}{a^3 f^3 g^3 n^3 \ln(F)^3}+\frac{3 d^2 \operatorname{polylog}\left(2,-\frac{b\left(F^{g(fx+e)}\right)^n}{a}\right)}{a^3 f^3 g^3 n^3 \ln(F)^3}+\frac{2 d^2 \operatorname{polylog}\left(3,-\frac{b\left(F^{g(fx+e)}\right)^n}{a}\right)}{a^3 f^3 g^3 n^3 \ln(F)^3}-\frac{2 c d \ln\left(a+b\left(F^{g(fx+e)}\right)^n\right) x}{\ln(F) a^3 f g n}$$
$$+\frac{2 c d \ln\left(\left(F^{g(fx+e)}\right)^n\right) x}{\ln(F) a^3 f g n}-\frac{2 d^2 \ln\left(\left(F^{g(fx+e)}\right)^n\right) \ln\left(F^{g(fx+e)}\right) x}{\ln(F)^2 a^3 f^2 g^2 n}+\frac{2 d^2 \ln\left(a+b\left(F^{g(fx+e)}\right)^n\right) \ln\left(F^{g(fx+e)}\right) x}{\ln(F)^2 a^3 f^2 g^2 n}$$
$$-\frac{2 d^2 \ln\left(1+\frac{b\left(F^{g(fx+e)}\right)^n}{a}\right) \ln\left(F^{g(fx+e)}\right) x}{\ln(F)^2 a^3 f^2 g^2 n}-\frac{2 c d \ln\left(1+\frac{b\left(F^{g(fx+e)}\right)^n}{a}\right) \ln\left(F^{g(fx+e)}\right)}{\ln(F)^2 a^3 f^2 g^2 n}+\frac{2 c d \ln\left(a+b\left(F^{g(fx+e)}\right)^n\right) \ln\left(F^{g(fx+e)}\right)}{\ln(F)^2 a^3 f^2 g^2 n}$$
$$-\frac{2 c d \ln\left(\left(F^{g(fx+e)}\right)^n\right) \ln\left(F^{g(fx+e)}\right)}{\ln(F)^2 a^3 f^2 g^2 n}-\frac{3 d^2 \ln\left(a+b\left(F^{g(fx+e)}\right)^n\right) \ln\left(F^{g(fx+e)}\right)}{\ln(F)^3 a^3 f^3 g^3 n^2}+\frac{3 d^2 \ln\left(1+\frac{b\left(F^{g(fx+e)}\right)^n}{a}\right) \ln\left(F^{g(fx+e)}\right)}{\ln(F)^3 a^3 f^3 g^3 n^2}$$
$$-\frac{3 d^2 \ln\left(\left(F^{g(fx+e)}\right)^n\right) x}{\ln(F)^2 a^3 f^2 g^2 n^2}+\frac{3 d^2 \ln\left(\left(F^{g(fx+e)}\right)^n\right) \ln\left(F^{g(fx+e)}\right)}{\ln(F)^3 a^3 f^3 g^3 n^2}-\frac{2 d^2 \operatorname{polylog}\left(2,-\frac{b\left(F^{g(fx+e)}\right)^n}{a}\right) x}{\ln(F)^2 a^3 f^2 g^2 n^2}-\frac{2 c d \operatorname{polylog}\left(2,-\frac{b\left(F^{g(fx+e)}\right)^n}{a}\right)}{\ln(F)^2 a^3 f^2 g^2 n^2}$$
$$-\frac{3 c d \ln\left(\left(F^{g(fx+e)}\right)^n\right)}{\ln(F)^2 a^3 f^2 g^2 n^2}+\frac{3 c d \ln\left(a+b\left(F^{g(fx+e)}\right)^n\right)}{\ln(F)^2 a^3 f^2 g^2 n^2}+\frac{d^2 \ln\left(\left(F^{g(fx+e)}\right)^n\right) x^2}{\ln(F) a^3 f g n}+\frac{d^2 \ln\left(\left(F^{g(fx+e)}\right)^n\right) \ln\left(F^{g(fx+e)}\right)^2}{\ln(F)^3 a^3 f^3 g^3 n}$$
$$-\frac{d^2 \ln\left(a+b\left(F^{g(fx+e)}\right)^n\right) x^2}{\ln(F) a^3 f g n}-\frac{d^2 \ln\left(a+b\left(F^{g(fx+e)}\right)^n\right) \ln\left(F^{g(fx+e)}\right)^2}{\ln(F)^3 a^3 f^3 g^3 n}+\frac{d^2 \ln\left(1+\frac{b\left(F^{g(fx+e)}\right)^n}{a}\right) \ln\left(F^{g(fx+e)}\right)^2}{\ln(F)^3 a^3 f^3 g^3 n}$$
$$+\frac{3 d^2 \ln\left(a+b\left(F^{g(fx+e)}\right)^n\right) x}{\ln(F)^2 a^3 f^2 g^2 n^2}-\frac{2 d^2 \ln\left(F^{g(fx+e)}\right)^3}{3 \ln(F)^3 a^3 f^3 g^3}+\frac{d c \ln\left(F^{g(fx+e)}\right)^2}{\ln(F)^2 a^3 f^2 g^2}+\frac{d^2 \ln\left(F^{g(fx+e)}\right)^2 x}{\ln(F)^2 a^3 f^2 g^2}-\frac{3 d^2 \ln\left(F^{g(fx+e)}\right)^2}{2 \ln(F)^3 a^3 f^3 g^3 n}+\frac{d^2 \ln\left(\left(F^{g(fx+e)}\right)^n\right)}{\ln(F)^3 a^3 f^3 g^3 n^3}$$
$$+\frac{c^2 \ln\left(\left(F^{g(fx+e)}\right)^n\right)}{\ln(F) a^3 f g n}-\frac{c^2 \ln\left(a+b\left(F^{g(fx+e)}\right)^n\right)}{\ln(F) a^3 f g n}+\frac{1}{2 \ln(F)^2 a^2 f^2 g^2 n^2 \left(a+b\left(F^{g(fx+e)}\right)^n\right)^2}\Big(2 \ln(F) b d^2 f g n x^2 \left(F^{g(fx+e)}\right)^n$$
$$+3 \ln(F) a d^2 f g n x^2+4 \ln(F) b c d f g n x \left(F^{g(fx+e)}\right)^n+6 \ln(F) a c d f g n x+2 \ln(F) b c^2 f g n \left(F^{g(fx+e)}\right)^n+3 \ln(F) a c^2 f g n-2 b d^2 x \left(F^{g(fx+e)}\right)^n$$
$$-2 a d^2 x-2 b c d \left(F^{g(fx+e)}\right)^n-2 a c d\Big)$$

Problem 23: Unable to integrate problem.

$$\int \left(a+b\left(F^{g(fx+e)}\right)^n\right)^3 (dx+c)^m \, dx$$

Optimal(type 4, 340 leaves, 8 steps):

$$\frac{a^3 (dx+c)^{1+m}}{d(1+m)}+\frac{3^{-m-1} b^3 F^{3\left(e-\frac{fc}{d}\right) g n-3 g n (fx+e)} \left(F^{fgx+eg}\right)^{3n} (dx+c)^m \Gamma\left(1+m,-\frac{3 f g n (dx+c) \ln(F)}{d}\right)}{f g n \ln(F) \left(-\frac{f g n (dx+c) \ln(F)}{d}\right)^m}$$

$$+\frac{3\,2^{-m-1}\,a\,b^2\,F^{2\left(e-\frac{fc}{d}\right)gn-2gn(fx+e)}\left(F^{fgx+eg}\right)^{2n}(dx+c)^m\,\Gamma\left(1+m,-\frac{2fgn(dx+c)\ln(F)}{d}\right)}{fgn\ln(F)\left(-\frac{fgn(dx+c)\ln(F)}{d}\right)^m}$$

$$+\frac{3\,a^2\,b\,F^{\left(e-\frac{fc}{d}\right)gn-gn(fx+e)}\left(F^{fgx+eg}\right)^{n}(dx+c)^m\,\Gamma\left(1+m,-\frac{fgn(dx+c)\ln(F)}{d}\right)}{fgn\ln(F)\left(-\frac{fgn(dx+c)\ln(F)}{d}\right)^m}$$

Result(type 8, 27 leaves):

$$\int\left(a+b\left(F^{g(fx+e)}\right)^n\right)^3(dx+c)^m\,dx$$

Test results for the 212 problems in "2.3 Exponential functions.txt"

Problem 7: Unable to integrate problem.

$$\int\left(a+b\left(F^{e(dx+c)}\right)^n\right)^p\left(G^{h(gx+f)}\right)^{\frac{den\ln(F)}{gh\ln(G)}}\,dx$$

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

$$\frac{\left(a+b\left(F^{e(dx+c)}\right)^n\right)^{1+p}\left(G^{h(gx+f)}\right)^{\frac{den\ln(F)}{gh\ln(G)}}}{b\,d\,e\left(F^{e(dx+c)}\right)^n n\,(1+p)\ln(F)}$$

Result(type 8, 46 leaves):

$$\int\left(a+b\left(F^{e(dx+c)}\right)^n\right)^p\left(G^{h(gx+f)}\right)^{\frac{den\ln(F)}{gh\ln(G)}}\,dx$$

Problem 12: Result more than twice size of optimal antiderivative.

$$\int\frac{f^{3bx+a}}{c+d\,f^{2bx+e}}\,dx$$

Optimal(type 3, 61 leaves, 3 steps):

$$\frac{f^{bx+a-e}}{b\,d\ln(f)}-\frac{f^{a-\frac{3e}{2}}\arctan\left(\frac{f^{bx+\frac{e}{2}}\sqrt{d}}{\sqrt{c}}\right)\sqrt{c}}{b\,d^{3/2}\ln(f)}$$

Result(type 3, 170 leaves):

$$\frac{f^{bx+\frac{a}{3}}}{\left(f^{\frac{e}{2}}\right)^2 \left(f^{-\frac{a}{3}}\right)^2 d\ln(f)\, b} + \frac{\sqrt{-dc}\,\ln\left(f^{bx+\frac{a}{3}} - \frac{\sqrt{-dc}}{d f^{-\frac{a}{3}} f^{\frac{e}{2}}}\right)}{2 d^2 b \ln(f) \left(f^{-\frac{a}{3}}\right)^3 \left(f^{\frac{e}{2}}\right)^3} - \frac{\sqrt{-dc}\,\ln\left(f^{bx+\frac{a}{3}} + \frac{\sqrt{-dc}}{d f^{-\frac{a}{3}} f^{\frac{e}{2}}}\right)}{2 d^2 b \ln(f) \left(f^{-\frac{a}{3}}\right)^3 \left(f^{\frac{e}{2}}\right)^3}$$

Problem 15: Unable to integrate problem.

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

Optimal(type 4, 136 leaves, 9 steps):

$$\frac{x^2 \arctan\left(\frac{f^x \sqrt{b}}{\sqrt{a}}\right)}{\ln(f)\sqrt{a}\sqrt{b}} - \frac{I x \operatorname{polylog}\left(2, \frac{-I f^x \sqrt{b}}{\sqrt{a}}\right)}{\ln(f)^2 \sqrt{a}\sqrt{b}} + \frac{I x \operatorname{polylog}\left(2, \frac{I f^x \sqrt{b}}{\sqrt{a}}\right)}{\ln(f)^2 \sqrt{a}\sqrt{b}} + \frac{I \operatorname{polylog}\left(3, \frac{-I f^x \sqrt{b}}{\sqrt{a}}\right)}{\ln(f)^3 \sqrt{a}\sqrt{b}} - \frac{I \operatorname{polylog}\left(3, \frac{I f^x \sqrt{b}}{\sqrt{a}}\right)}{\ln(f)^3 \sqrt{a}\sqrt{b}}$$

Result(type 8, 20 leaves):

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

Problem 17: Unable to integrate problem.

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

Optimal(type 4, 241 leaves, 16 steps):

$$\frac{f^x x^2}{2 a \left(a + b f^{2x}\right) \ln(f)} - \frac{x \arctan\left(\frac{f^x \sqrt{b}}{\sqrt{a}}\right)}{a^{3/2} \ln(f)^2 \sqrt{b}} + \frac{x^2 \arctan\left(\frac{f^x \sqrt{b}}{\sqrt{a}}\right)}{2 a^{3/2} \ln(f) \sqrt{b}} + \frac{I \operatorname{polylog}\left(2, \frac{-I f^x \sqrt{b}}{\sqrt{a}}\right)}{2 a^{3/2} \ln(f)^3 \sqrt{b}} - \frac{I x \operatorname{polylog}\left(2, \frac{-I f^x \sqrt{b}}{\sqrt{a}}\right)}{2 a^{3/2} \ln(f)^2 \sqrt{b}} - \frac{I \operatorname{polylog}\left(2, \frac{I f^x \sqrt{b}}{\sqrt{a}}\right)}{2 a^{3/2} \ln(f)^3 \sqrt{b}}$$
$$+ \frac{I x \operatorname{polylog}\left(2, \frac{I f^x \sqrt{b}}{\sqrt{a}}\right)}{2 a^{3/2} \ln(f)^2 \sqrt{b}} + \frac{I \operatorname{polylog}\left(3, \frac{-I f^x \sqrt{b}}{\sqrt{a}}\right)}{2 a^{3/2} \ln(f)^3 \sqrt{b}} - \frac{I \operatorname{polylog}\left(3, \frac{I f^x \sqrt{b}}{\sqrt{a}}\right)}{2 a^{3/2} \ln(f)^3 \sqrt{b}}$$

Result(type 8, 67 leaves):

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

Problem 18: Unable to integrate problem.

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

Optimal(type 4, 136 leaves, 9 steps):

$$\frac{x^2 \arctan\left(\frac{f^x \sqrt{a}}{\sqrt{b}}\right)}{\ln(f)\sqrt{a}\sqrt{b}} - \frac{I\, x \operatorname{polylog}\left(2, \frac{-I f^x \sqrt{a}}{\sqrt{b}}\right)}{\ln(f)^2 \sqrt{a}\sqrt{b}} + \frac{I\, x \operatorname{polylog}\left(2, \frac{I f^x \sqrt{a}}{\sqrt{b}}\right)}{\ln(f)^2 \sqrt{a}\sqrt{b}} + \frac{I \operatorname{polylog}\left(3, \frac{-I f^x \sqrt{a}}{\sqrt{b}}\right)}{\ln(f)^3 \sqrt{a}\sqrt{b}} - \frac{I \operatorname{polylog}\left(3, \frac{I f^x \sqrt{a}}{\sqrt{b}}\right)}{\ln(f)^3 \sqrt{a}\sqrt{b}}$$

Result(type 8, 21 leaves):

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

Problem 20: Unable to integrate problem.

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

Optimal(type 4, 242 leaves, 43 steps):

$$-\frac{\arctan\left(\frac{f^x \sqrt{a}}{\sqrt{b}}\right)}{4 a^{3/2} b^{3/2} \ln(f)^3} + \frac{f^x x}{4 a b \left(b + a f^{2x}\right) \ln(f)^2} - \frac{f^x x^2}{4 a \left(b + a f^{2x}\right)^2 \ln(f)} + \frac{f^x x^2}{8 a b \left(b + a f^{2x}\right) \ln(f)} + \frac{x^2 \arctan\left(\frac{f^x \sqrt{a}}{\sqrt{b}}\right)}{8 a^{3/2} b^{3/2} \ln(f)} - \frac{I\, x \operatorname{polylog}\left(2, \frac{-I f^x \sqrt{a}}{\sqrt{b}}\right)}{8 a^{3/2} b^{3/2} \ln(f)^2}$$

$$+ \frac{I\, x \operatorname{polylog}\left(2, \frac{I f^x \sqrt{a}}{\sqrt{b}}\right)}{8 a^{3/2} b^{3/2} \ln(f)^2} + \frac{I \operatorname{polylog}\left(3, \frac{-I f^x \sqrt{a}}{\sqrt{b}}\right)}{8 a^{3/2} b^{3/2} \ln(f)^3} - \frac{I \operatorname{polylog}\left(3, \frac{I f^x \sqrt{a}}{\sqrt{b}}\right)}{8 a^{3/2} b^{3/2} \ln(f)^3}$$

Result(type 8, 106 leaves):

$$\frac{e^{x \ln(f)}\, x \left(\ln(f)\, a x \left(e^{x \ln(f)}\right)^2 - \ln(f)\, b x + 2 \left(e^{x \ln(f)}\right)^2 a + 2 b\right)}{8 b \ln(f)^2 a \left(\left(e^{x \ln(f)}\right)^2 a + b\right)^2} + \int \frac{e^{x \ln(f)} \left(\ln(f)^2 x^2 - 2\right)}{8 b \ln(f)^2 a \left(\left(e^{x \ln(f)}\right)^2 a + b\right)}\, dx$$

Problem 21: Unable to integrate problem.

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

Optimal(type 4, 84 leaves, 3 steps):

$$\frac{f^a g^d \operatorname{erfi}\left(\frac{b\ln(f)+e\ln(g)+2x(c\ln(f)+f\ln(g))}{2\sqrt{c\ln(f)+f\ln(g)}}\right)\sqrt{\pi}}{2\,e^{\frac{(b\ln(f)+e\ln(g))^2}{4(c\ln(f)+f\ln(g))}}\sqrt{c\ln(f)+f\ln(g)}}$$

Result(type 8, 27 leaves):

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

Problem 22: Unable to integrate problem.

$$\int F^{e(d x+c)}\left(a+b G^{h(g x+f)}\right)^n dx$$

Optimal(type 5, 108 leaves, 2 steps):

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

Result(type 8, 27 leaves):

$$\int F^{e(d x+c)}\left(a+b G^{h(g x+f)}\right)^n dx$$

Problem 24: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 18 leaves, 1 step):

$$-\frac{f^a \operatorname{Ei}_5(-b x^2\ln(f))}{2x^8}$$

Result(type 4, 100 leaves):

$$-\frac{f^a f^{b x^2}}{8x^8}-\frac{f^a\ln(f)\,b f^{b x^2}}{24x^6}-\frac{f^a\ln(f)^2 b^2 f^{b x^2}}{48x^4}-\frac{f^a\ln(f)^3 b^3 f^{b x^2}}{48x^2}-\frac{f^a\ln(f)^4 b^4 \operatorname{Ei}_1(-b x^2\ln(f))}{48}$$

Problem 25: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 18 leaves, 1 step):

$$-\frac{f^a \operatorname{Ei}_6(-b x^2\ln(f))}{2x^{10}}$$

Result(type 4, 122 leaves):

$$-\frac{f^a f^{b x^2}}{10 x^{10}}-\frac{f^a \ln(f)\, b f^{b x^2}}{40 x^8}-\frac{f^a \ln(f)^2 b^2 f^{b x^2}}{120 x^6}-\frac{f^a \ln(f)^3 b^3 f^{b x^2}}{240 x^4}-\frac{f^a \ln(f)^4 b^4 f^{b x^2}}{240 x^2}-\frac{f^a \ln(f)^5 b^5 \mathrm{Ei}_1\left(-b x^2 \ln(f)\right)}{240}$$

Problem 30: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 13 leaves, 1 step):

$$\frac{f^a \mathrm{Ei}\left(b x^3 \ln(f)\right)}{3}$$

Result(type 4, 40 leaves):

$$\frac{f^a\left(3 \ln(x)+\ln(-b)+\ln(\ln(f))-\ln\left(-b x^3 \ln(f)\right)-\mathrm{Ei}_1\left(-b x^3 \ln(f)\right)\right)}{3}$$

Problem 31: Result more than twice size of optimal antiderivative.

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

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

$$-\frac{f^a \Gamma\left(-\frac{2}{3}, -b x^3 \ln(f)\right)\left(-b x^3 \ln(f)\right)^{2/3}}{3 x^2}$$

Result(type 4, 101 leaves):

$$-\frac{f^a b \ln(f)^{2/3}\left(\frac{x \ln(f)^{1/3} b \pi \sqrt{3}}{(-b)^{2/3} \Gamma\left(\frac{2}{3}\right)\left(-b x^3 \ln(f)\right)^{1/3}}-\frac{3 e^{b x^3 \ln(f)}}{2 x^2 (-b)^{2/3} \ln(f)^{2/3}}-\frac{3 x \ln(f)^{1/3} b \Gamma\left(\frac{1}{3}, -b x^3 \ln(f)\right)}{2 (-b)^{2/3}\left(-b x^3 \ln(f)\right)^{1/3}}\right)}{3 (-b)^{1/3}}$$

Problem 32: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 17 leaves, 1 step):

$$f^a x^4 \mathrm{Ei}_5\left(-\frac{b \ln(f)}{x}\right)$$

Result(type 4, 102 leaves):

$$\frac{f^{\frac{ax+b}{x}} x^4}{4} + \frac{\ln(f)\, b f^{\frac{ax+b}{x}} x^3}{12} + \frac{\ln(f)^2 b^2 f^{\frac{ax+b}{x}} x^2}{24} + \frac{\ln(f)^3 b^3 f^{\frac{ax+b}{x}} x}{24} + \frac{\ln(f)^4 b^4 f^a \operatorname{Ei}_1\left(-\frac{b\ln(f)}{x}\right)}{24}$$

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Problem 45: Result more than twice size of optimal antiderivative.
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$$\int f^{a+\frac{b}{x^3}} x^{14}\, dx$$

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Optimal(type 4, 18 leaves, 1 step):
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$$\frac{f^a x^{15} \operatorname{Ei}_6\left(-\frac{b\ln(f)}{x^3}\right)}{3}$$

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Result(type 4, 248 leaves):
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$$\frac{1}{3}\Bigg(f^a b^5 \ln(f)^5 \Bigg(\frac{x^{15}}{5 b^5 \ln(f)^5} + \frac{x^{12}}{4 b^4 \ln(f)^4} + \frac{x^9}{6 b^3 \ln(f)^3} + \frac{x^6}{12 b^2 \ln(f)^2} + \frac{x^3}{24 b \ln(f)} + \frac{137}{7200} + \frac{\ln(x)}{40} - \frac{\ln(-b)}{120} - \frac{\ln(\ln(f))}{120}$$
$$- \frac{x^{15}\left(\frac{137 b^5 \ln(f)^5}{x^{15}} + \frac{300 b^4 \ln(f)^4}{x^{12}} + \frac{600 b^3 \ln(f)^3}{x^9} + \frac{1200 b^2 \ln(f)^2}{x^6} + \frac{1800 b \ln(f)}{x^3} + 1440\right)}{7200 b^5 \ln(f)^5}$$
$$+ \frac{x^{15}\left(\frac{6 b^4 \ln(f)^4}{x^{12}} + \frac{6 b^3 \ln(f)^3}{x^9} + \frac{12 b^2 \ln(f)^2}{x^6} + \frac{36 b \ln(f)}{x^3} + 144\right) e^{\frac{b\ln(f)}{x^3}}}{720 b^5 \ln(f)^5} + \frac{\ln\left(-\frac{b\ln(f)}{x^3}\right)}{120} + \frac{\operatorname{Ei}_1\left(-\frac{b\ln(f)}{x^3}\right)}{120}\Bigg)\Bigg)$$

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Problem 46: Result more than twice size of optimal antiderivative.
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$$\int f^{a+\frac{b}{x^3}} x^{11}\, dx$$

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Optimal(type 4, 18 leaves, 1 step):
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$$\frac{f^a x^{12} \operatorname{Ei}_5\left(-\frac{b\ln(f)}{x^3}\right)}{3}$$

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Result(type 4, 212 leaves):
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$$-\frac{1}{3}\Bigg(f^a b^4 \ln(f)^4 \Bigg(-\frac{x^{12}}{4 b^4 \ln(f)^4} - \frac{x^9}{3 b^3 \ln(f)^3} - \frac{x^6}{4 b^2 \ln(f)^2} - \frac{x^3}{6 b \ln(f)} - \frac{25}{288} - \frac{\ln(x)}{8} + \frac{\ln(-b)}{24} + \frac{\ln(\ln(f))}{24}$$

$$+\frac{x^{12}\left(\frac{125 b^4 \ln(f)^4}{x^{12}}+\frac{240 b^3 \ln(f)^3}{x^9}+\frac{360 b^2 \ln(f)^2}{x^6}+\frac{480 b \ln(f)}{x^3}+360\right)}{1440 b^4 \ln(f)^4}-\frac{x^{12}\left(\frac{5 b^3 \ln(f)^3}{x^9}+\frac{5 b^2 \ln(f)^2}{x^6}+\frac{10 b \ln(f)}{x^3}+30\right) e^{\frac{b \ln(f)}{x^3}}}{120 b^4 \ln(f)^4}$$

$$-\frac{\ln\left(-\frac{b \ln(f)}{x^3}\right)}{24}-\frac{\mathrm{Ei}_1\left(-\frac{b \ln(f)}{x^3}\right)}{24}\Bigg)\Bigg)$$

Problem 48: Result more than twice size of optimal antiderivative.

$$\int f^{a+\frac{b}{x^3}} x^4 \, dx$$

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

$$\frac{f^a x^5 \Gamma\left(-\frac{5}{3},-\frac{b \ln(f)}{x^3}\right)\left(-\frac{b \ln(f)}{x^3}\right)^{5/3}}{3}$$

Result(type 4, 119 leaves):

$$-\frac{f^a (-b)^{5/3} \ln(f)^{5/3}\left(\frac{3 \ln(f)^{1/3} b^2 \pi \sqrt{3}}{5 x (-b)^{5/3} \Gamma\left(\frac{2}{3}\right)\left(-\frac{b \ln(f)}{x^3}\right)^{1/3}}-\frac{3 x^5\left(\frac{3 b \ln(f)}{2 x^3}+1\right) e^{\frac{b \ln(f)}{x^3}}}{5 (-b)^{5/3} \ln(f)^{5/3}}-\frac{9 \ln(f)^{1/3} b^2 \Gamma\left(\frac{1}{3},-\frac{b \ln(f)}{x^3}\right)}{10 x (-b)^{5/3}\left(-\frac{b \ln(f)}{x^3}\right)^{1/3}}\right)}{3}$$

Problem 55: Unable to integrate problem.

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

Optimal(type 4, 158 leaves, 8 steps):

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

$$-\frac{(b x+a)^5 \Gamma\left(\frac{5}{3},-(b x+a)^3\right)}{3 b^5\left(-(b x+a)^3\right)^{5/3}}$$

Result(type 8, 34 leaves):

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

Problem 63: Unable to integrate problem.

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

Optimal(type 4, 168 leaves, 7 steps):

$$-\frac{a f^{\frac{c}{(bx+a)^3}} (bx+a)^3}{b^4} + \frac{a c \operatorname{Ei}\left(\frac{c \ln(f)}{(bx+a)^3}\right) \ln(f)}{b^4} - \frac{a^3 (bx+a) \Gamma\left(-\frac{1}{3}, -\frac{c \ln(f)}{(bx+a)^3}\right) \left(-\frac{c \ln(f)}{(bx+a)^3}\right)^{1/3}}{3 b^4} + \frac{a^2 (bx+a)^2 \Gamma\left(-\frac{2}{3}, -\frac{c \ln(f)}{(bx+a)^3}\right) \left(-\frac{c \ln(f)}{(bx+a)^3}\right)^{2/3}}{b^4} + \frac{(bx+a)^4 \Gamma\left(-\frac{4}{3}, -\frac{c \ln(f)}{(bx+a)^3}\right) \left(-\frac{c \ln(f)}{(bx+a)^3}\right)^{4/3}}{3 b^4}$$

Result(type 8, 17 leaves):

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

Problem 66: Result more than twice size of optimal antiderivative.

$$\int f^{c (bx+a)} x^m \, dx$$

Optimal(type 4, 41 leaves, 1 step):

$$\frac{f^{a c} x^m \Gamma(1+m, -b c x \ln(f))}{b c \ln(f) (-b c x \ln(f))^m}$$

Result(type 4, 116 leaves):

$$-\frac{1}{b c} \left(f^{a c} (-b c)^{-m} \ln(f)^{-m-1} \left(x^m (-b c)^m \ln(f)^m m \Gamma(m) (-b c x \ln(f))^{-m} - x^m (-b c)^m \ln(f)^m e^{b c x \ln(f)} - x^m (-b c)^m \ln(f)^m m (-b c x \ln(f))^{-m} \Gamma(m, -b c x \ln(f))\right)\right)$$

Problem 68: Unable to integrate problem.

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

Optimal(type 4, 213 leaves, 6 steps):

$$-\frac{(bx+a)^4 \Gamma\left(\frac{4}{n}, -c (bx+a)^n \ln(f)\right)}{b^4 n \left(-c (bx+a)^n \ln(f)\right)^{\frac{4}{n}}} + \frac{3 a (bx+a)^3 \Gamma\left(\frac{3}{n}, -c (bx+a)^n \ln(f)\right)}{b^4 n \left(-c (bx+a)^n \ln(f)\right)^{\frac{3}{n}}} - \frac{3 a^2 (bx+a)^2 \Gamma\left(\frac{2}{n}, -c (bx+a)^n \ln(f)\right)}{b^4 n \left(-c (bx+a)^n \ln(f)\right)^{\frac{2}{n}}}$$

$$+\frac{a^3 (b x+a) \Gamma\left(\frac{1}{n}, -c (b x+a)^n \ln(f)\right)}{b^4 n \left(-c (b x+a)^n \ln(f)\right)^{\frac{1}{n}}}$$

Result(type 8, 17 leaves):

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

Problem 69: Unable to integrate problem.

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

Optimal(type 4, 47 leaves, 1 step):

$$-\frac{(b x+a) \Gamma\left(\frac{1}{n}, -c (b x+a)^n \ln(f)\right)}{b n \left(-c (b x+a)^n \ln(f)\right)^{\frac{1}{n}}}$$

Result(type 8, 13 leaves):

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

Problem 73: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 578 leaves, 1 step):

$$-\frac{1}{2 d \left(-b (d x+c)^2 \ln(F)\right)^{13/2}} \left(F^a (d x+c)^{13} \left(\frac{524288 \Gamma\left(\frac{51}{2}, -b (d x+c)^2 \ln(F)\right)}{5621533568633696205238621875} - \frac{524288 \left(-b (d x+c)^2 \ln(F)\right)^{49/2} e^{b (d x+c)^2 \ln(F)}}{5621533568633696205238621875} \right.\right.$$

$$- \frac{262144 \left(-b (d x+c)^2 \ln(F)\right)^{47/2} e^{b (d x+c)^2 \ln(F)}}{114725174870075432759971875} - \frac{131072 \left(-b (d x+c)^2 \ln(F)\right)^{45/2} e^{b (d x+c)^2 \ln(F)}}{2440961167448413462978125}$$

$$- \frac{65536 \left(-b (d x+c)^2 \ln(F)\right)^{43/2} e^{b (d x+c)^2 \ln(F)}}{54243581498853632510625} - \frac{32768 \left(-b (d x+c)^2 \ln(F)\right)^{41/2} e^{b (d x+c)^2 \ln(F)}}{1261478639508224011875}$$

$$- \frac{16384 \left(-b (d x+c)^2 \ln(F)\right)^{39/2} e^{b (d x+c)^2 \ln(F)}}{30767771695322536875} - \frac{8192 \left(-b (d x+c)^2 \ln(F)\right)^{37/2} e^{b (d x+c)^2 \ln(F)}}{788917222956988125} - \frac{4096 \left(-b (d x+c)^2 \ln(F)\right)^{35/2} e^{b (d x+c)^2 \ln(F)}}{21322087106945625}$$

$$- \frac{2048 \left(-b (d x+c)^2 \ln(F)\right)^{33/2} e^{b (d x+c)^2 \ln(F)}}{609202488769875} - \frac{1024 \left(-b (d x+c)^2 \ln(F)\right)^{31/2} e^{b (d x+c)^2 \ln(F)}}{18460681477875} - \frac{512 \left(-b (d x+c)^2 \ln(F)\right)^{29/2} e^{b (d x+c)^2 \ln(F)}}{595505854125}$$

$$- \frac{256 \left(-b \left(d x+c\right)^{2} \ln(F)\right)^{27/2} e^{b \left(d x+c\right)^{2} \ln(F)}}{20534684625} - \frac{128 \left(-b \left(d x+c\right)^{2} \ln(F)\right)^{25/2} e^{b \left(d x+c\right)^{2} \ln(F)}}{760543875} - \frac{64 \left(-b \left(d x+c\right)^{2} \ln(F)\right)^{23/2} e^{b \left(d x+c\right)^{2} \ln(F)}}{30421755}$$

$$- \frac{32 \left(-b \left(d x+c\right)^{2} \ln(F)\right)^{21/2} e^{b \left(d x+c\right)^{2} \ln(F)}}{1322685} - \frac{16 \left(-b \left(d x+c\right)^{2} \ln(F)\right)^{19/2} e^{b \left(d x+c\right)^{2} \ln(F)}}{62985} - \frac{8 \left(-b \left(d x+c\right)^{2} \ln(F)\right)^{17/2} e^{b \left(d x+c\right)^{2} \ln(F)}}{3315}$$

$$- \frac{4 \left(-b \left(d x+c\right)^{2} \ln(F)\right)^{15/2} e^{b \left(d x+c\right)^{2} \ln(F)}}{195} - \frac{2 \left(-b \left(d x+c\right)^{2} \ln(F)\right)^{13/2} e^{b \left(d x+c\right)^{2} \ln(F)}}{13} \Bigg) \Bigg)$$

Result(type 4, 1685 leaves):

$$- \frac{11 d^{8} x^{9} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{4 \ln(F)^{2} b^{2}} - \frac{693 d^{4} x^{5} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{16 \ln(F)^{4} b^{4}} + \frac{3465 d^{2} x^{3} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{32 \ln(F)^{5} b^{5}} + \frac{99 d^{6} x^{7} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{8 \ln(F)^{3} b^{3}}$$

$$+ \frac{d^{10} x^{11} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{2 \ln(F) b} - \frac{10395 c F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{64 d \ln(F)^{6} b^{6}} - \frac{693 c^{5} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{16 d \ln(F)^{4} b^{4}} + \frac{c^{11} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{2 d \ln(F) b}$$

$$- \frac{11 c^{9} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{4 d \ln(F)^{2} b^{2}} + \frac{99 c^{7} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{8 d \ln(F)^{3} b^{3}} + \frac{3465 c^{3} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{32 d \ln(F)^{5} b^{5}} + \frac{693 c^{6} x F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{8 \ln(F)^{3} b^{3}}$$

$$- \frac{3465 c^{4} x F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{16 \ln(F)^{4} b^{4}} + \frac{11 c^{10} x F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{2 \ln(F) b} - \frac{99 c^{8} x F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{4 \ln(F)^{2} b^{2}} + \frac{10395 c^{2} x F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{32 \ln(F)^{5} b^{5}}$$

$$- \frac{10395 x F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{64 \ln(F)^{6} b^{6}} + \frac{231 d^{5} c^{5} x^{6} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{\ln(F) b} + \frac{231 d^{4} c^{6} x^{5} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{\ln(F) b} + \frac{165 d^{3} c^{7} x^{4} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{\ln(F) b}$$

$$+ \frac{165 d^{2} c^{8} x^{3} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{2 \ln(F) b} + \frac{55 d c^{9} x^{2} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{2 \ln(F) b} - \frac{99 d c^{7} x^{2} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{\ln(F)^{2} b^{2}} + \frac{11 d^{9} c x^{10} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{2 \ln(F) b}$$

$$- \frac{99 d^{7} c x^{8} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{4 \ln(F)^{2} b^{2}} - \frac{3465 d^{3} c x^{4} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{16 \ln(F)^{4} b^{4}} + \frac{10395 d c x^{2} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{32 \ln(F)^{5} b^{5}} + \frac{693 d^{5} c x^{6} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{8 \ln(F)^{3} b^{3}}$$

$$+ \frac{55 d^{8} c^{2} x^{9} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{2 \ln(F) b} + \frac{2079 d^{4} c^{2} x^{5} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{8 \ln(F)^{3} b^{3}} - \frac{3465 d^{2} c^{2} x^{3} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{8 \ln(F)^{4} b^{4}}$$

$$- \frac{99 d^{6} c^{2} x^{7} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{\ln(F)^{2} b^{2}} + \frac{165 d^{7} c^{3} x^{8} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{2 \ln(F) b} + \frac{3465 d^{3} c^{3} x^{4} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{8 \ln(F)^{3} b^{3}}$$

$$- \frac{3465 d c^{3} x^{2} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{8 \ln(F)^{4} b^{4}} - \frac{231 d^{5} c^{3} x^{6} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{\ln(F)^{2} b^{2}} - \frac{231 d^{2} c^{6} x^{3} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{\ln(F)^{2} b^{2}}$$

$$- \frac{693 d^{4} c^{4} x^{5} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{2 \ln(F)^{2} b^{2}} + \frac{3465 d^{2} c^{4} x^{3} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{8 \ln(F)^{3} b^{3}} + \frac{165 d^{6} c^{4} x^{7} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{\ln(F) b}$$

$$- \frac{693 d^{3} c^{5} x^{4} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{2 \ln(F)^{2} b^{2}} + \frac{2079 d c^{5} x^{2} F^{b d^{2} x^{2}+2 b c d x+b c^{2}+a}}{8 \ln(F)^{3} b^{3}} - \frac{10395 \sqrt{\pi}\, F^{a} \operatorname{erf}\left(-d \sqrt{-b \ln(F)}\, x + \frac{c b \ln(F)}{\sqrt{-b \ln(F)}}\right)}{128 d \ln(F)^{6} b^{6} \sqrt{-b \ln(F)}}$$

Problem 75: Result more than twice size of optimal antiderivative.

$$\int F^{a+b(dx+c)^3} (dx+c)^{17}\, dx$$

Optimal(type 3, 103 leaves, 1 step):

$$-\frac{F^{a+b(dx+c)^3}\left(120-120\,b\,(dx+c)^3\ln(F)+60\,b^2\,(dx+c)^6\ln(F)^2-20\,b^3\,(dx+c)^9\ln(F)^3+5\,b^4\,(dx+c)^{12}\ln(F)^4-b^5\,(dx+c)^{15}\ln(F)^5\right)}{3\,b^6\,d\ln(F)^6}$$

Result(type 3, 856 leaves):

$$\frac{1}{3\ln(F)^6 b^6 d}\Big(\big(-120+120\ln(F)\,b\,c^3-5\ln(F)^4 b^4 c^{12}+\ln(F)^5 b^5 c^{15}+20\ln(F)^3 b^3 c^9-60\ln(F)^2 b^2 c^6+120\,d^3x^3\,b\ln(F)-60\,c\,d^{11}x^{11}\ln(F)^4 b^4$$
$$+3003\ln(F)^5 b^5 c^{10} d^5 x^5-330\,c^2 d^{10} x^{10}\ln(F)^4 b^4+1365\ln(F)^5 b^5 c^{11} d^4 x^4-1100\ln(F)^4 b^4 c^3 d^9 x^9+455\ln(F)^5 b^5 c^{12} d^3 x^3-2475\ln(F)^4 b^4 c^4 d^8 x^8$$
$$+105\ln(F)^5 b^5 c^{13} d^2 x^2-3960\ln(F)^4 b^4 c^5 d^7 x^7+15\ln(F)^5 b^5 c^{14}\,d\,x-4620\ln(F)^4 b^4 c^6 d^6 x^6-3960\ln(F)^4 b^4 c^7 d^5 x^5-2475\ln(F)^4 b^4 c^8 d^4 x^4$$
$$-1100\ln(F)^4 b^4 c^9 d^3 x^3+180\,c\,d^8 x^8\ln(F)^3 b^3-330\ln(F)^4 b^4 c^{10} d^2 x^2+720\,c^2 d^7 x^7\ln(F)^3 b^3-60\ln(F)^4 b^4 c^{11}\,d\,x+1680\ln(F)^3 b^3 c^3 d^6 x^6$$
$$+2520\ln(F)^3 b^3 c^4 d^5 x^5+2520\ln(F)^3 b^3 c^5 d^4 x^4+1680\ln(F)^3 b^3 c^6 d^3 x^3+720\ln(F)^3 b^3 c^7 d^2 x^2+180\ln(F)^3 b^3 c^8\,d\,x-360\,c\,d^5 x^5\ln(F)^2 b^2$$
$$-900\ln(F)^2 b^2 c^2 d^4 x^4-1200\ln(F)^2 b^2 c^3 d^3 x^3-900\ln(F)^2 b^2 c^4 d^2 x^2-360\ln(F)^2 b^2 c^5\,d\,x+15\,d^{14}\,c\,x^{14}\ln(F)^5 b^5+105\,d^{13} c^2 x^{13}\ln(F)^5 b^5$$
$$+455\ln(F)^5 b^5 c^3 d^{12} x^{12}+1365\ln(F)^5 b^5 c^4 d^{11} x^{11}+3003\ln(F)^5 b^5 c^5 d^{10} x^{10}+5005\ln(F)^5 b^5 c^6 d^9 x^9+6435\ln(F)^5 b^5 c^7 d^8 x^8+6435\ln(F)^5 b^5 c^8 d^7 x^7$$
$$+5005\ln(F)^5 b^5 c^9 d^6 x^6+d^{15} x^{15}\ln(F)^5 b^5-5\,d^{12} x^{12}\ln(F)^4 b^4+20\,d^9 x^9\ln(F)^3 b^3-60\,d^6 x^6\ln(F)^2 b^2+360\ln(F)\,b\,c\,d^2 x^2+360\ln(F)\,b\,c^2\,d\,x\big)$$
$$F^{b d^3 x^3+3 b c d^2 x^2+3 b c^2 d x+b c^3+a}\Big)$$

Problem 76: Result more than twice size of optimal antiderivative.

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

Optimal(type 3, 86 leaves, 1 step):

$$\frac{F^{a+b(dx+c)^3}\left(24-24\,b\,(dx+c)^3\ln(F)+12\,b^2\,(dx+c)^6\ln(F)^2-4\,b^3\,(dx+c)^9\ln(F)^3+b^4\,(dx+c)^{12}\ln(F)^4\right)}{3\,b^5\,d\ln(F)^5}$$

Result(type 3, 583 leaves):

$$\frac{1}{3\ln(F)^5 b^5 d}\Big(\big(24-24\ln(F)\,b\,c^3+\ln(F)^4 b^4 c^{12}-4\ln(F)^3 b^3 c^9+12\ln(F)^2 b^2 c^6-24\,d^3 x^3\,b\ln(F)+12\,c\,d^{11} x^{11}\ln(F)^4 b^4+66\,c^2 d^{10} x^{10}\ln(F)^4 b^4$$
$$+220\ln(F)^4 b^4 c^3 d^9 x^9+495\ln(F)^4 b^4 c^4 d^8 x^8+792\ln(F)^4 b^4 c^5 d^7 x^7+924\ln(F)^4 b^4 c^6 d^6 x^6+792\ln(F)^4 b^4 c^7 d^5 x^5+495\ln(F)^4 b^4 c^8 d^4 x^4$$
$$+220\ln(F)^4 b^4 c^9 d^3 x^3-36\,c\,d^8 x^8\ln(F)^3 b^3+66\ln(F)^4 b^4 c^{10} d^2 x^2-144\,c^2 d^7 x^7\ln(F)^3 b^3+12\ln(F)^4 b^4 c^{11}\,d\,x-336\ln(F)^3 b^3 c^3 d^6 x^6$$
$$-504\ln(F)^3 b^3 c^4 d^5 x^5-504\ln(F)^3 b^3 c^5 d^4 x^4-336\ln(F)^3 b^3 c^6 d^3 x^3-144\ln(F)^3 b^3 c^7 d^2 x^2-36\ln(F)^3 b^3 c^8\,d\,x+72\,c\,d^5 x^5\ln(F)^2 b^2$$
$$+180\ln(F)^2 b^2 c^2 d^4 x^4+240\ln(F)^2 b^2 c^3 d^3 x^3+180\ln(F)^2 b^2 c^4 d^2 x^2+72\ln(F)^2 b^2 c^5\,d\,x+d^{12} x^{12}\ln(F)^4 b^4-4\,d^9 x^9\ln(F)^3 b^3+12\,d^6 x^6\ln(F)^2 b^2$$
$$-72\ln(F)\,b\,c\,d^2 x^2-72\ln(F)\,b\,c^2\,d\,x\big)\,F^{b d^3 x^3+3 b c d^2 x^2+3 b c^2 d x+b c^3+a}\Big)$$

Problem 77: Result more than twice size of optimal antiderivative.

$$\int F^{a+b(dx+c)^3}(dx+c)^8\,dx$$

Optimal(type 3, 90 leaves, 3 steps):

$$\frac{2F^{a+b(dx+c)^3}}{3b^3d\ln(F)^3}-\frac{2F^{a+b(dx+c)^3}(dx+c)^3}{3b^2d\ln(F)^2}+\frac{F^{a+b(dx+c)^3}(dx+c)^6}{3bd\ln(F)}$$

Result(type 3, 199 leaves):

$$\frac{1}{3\ln(F)^3b^3d}\Big(\big(d^6x^6\ln(F)^2b^2+6cd^5x^5\ln(F)^2b^2+15\ln(F)^2b^2c^2d^4x^4+20\ln(F)^2b^2c^3d^3x^3+15\ln(F)^2b^2c^4d^2x^2+6\ln(F)^2b^2c^5dx+\ln(F)^2b^2c^6$$
$$-2d^3x^3b\ln(F)-6\ln(F)bcd^2x^2-6\ln(F)bc^2dx-2\ln(F)bc^3+2\big)F^{bd^3x^3+3bcd^2x^2+3bc^2dx+bc^3+a}\Big)$$

Problem 78: Unable to integrate problem.

$$\int\frac{F^{a+b(dx+c)^3}}{(dx+c)^7}\,dx$$

Optimal(type 4, 81 leaves, 3 steps):

$$-\frac{F^{a+b(dx+c)^3}}{6d(dx+c)^6}-\frac{bF^{a+b(dx+c)^3}\ln(F)}{6d(dx+c)^3}+\frac{b^2F^a\operatorname{Ei}\big(b(dx+c)^3\ln(F)\big)\ln(F)^2}{6d}$$

Result(type 8, 23 leaves):

$$\int\frac{F^{a+b(dx+c)^3}}{(dx+c)^7}\,dx$$

Problem 79: Unable to integrate problem.

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

Optimal(type 4, 41 leaves, 1 step):

$$-\frac{F^a(dx+c)\,\Gamma\left(\frac{1}{3},-b(dx+c)^3\ln(F)\right)}{3d\left(-b(dx+c)^3\ln(F)\right)^{1/3}}$$

Result(type 8, 15 leaves):

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

Problem 80: Unable to integrate problem.

$$\int f^{a+b\sqrt{dx+c}}\,dx$$

Optimal(type 3, 58 leaves, 3 steps):

$$-\frac{2 f^{a+b\sqrt{dx+c}}}{b^2 d \ln(f)^2}+\frac{2 f^{a+b\sqrt{dx+c}}\sqrt{dx+c}}{b d \ln(f)}$$

Result(type 8, 15 leaves):

$$\int f^{a+b\sqrt{dx+c}}\, dx$$

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

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

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

$$\frac{F^a (dx+c)^5 \operatorname{Ei}_6\left(-\frac{b\ln(F)}{dx+c}\right)}{d}$$

Result(type 4, 633 leaves):

$$\frac{d^4 F^{\frac{xad+ac+b}{dx+c}} x^5}{5}+d^3 F^{\frac{xad+ac+b}{dx+c}} c x^4+2 d^2 F^{\frac{xad+ac+b}{dx+c}} c^2 x^3+2 d F^{\frac{xad+ac+b}{dx+c}} c^3 x^2+F^{\frac{xad+ac+b}{dx+c}} c^4 x+\frac{F^{\frac{xad+ac+b}{dx+c}} c^5}{5d}$$
$$+\frac{d^3 b\ln(F) F^{\frac{xad+ac+b}{dx+c}} x^4}{20}+\frac{d^2 b\ln(F) F^{\frac{xad+ac+b}{dx+c}} c x^3}{5}+\frac{3 d b\ln(F) F^{\frac{xad+ac+b}{dx+c}} c^2 x^2}{10}+\frac{b\ln(F) F^{\frac{xad+ac+b}{dx+c}} c^3 x}{5}+\frac{b\ln(F) F^{\frac{xad+ac+b}{dx+c}} c^4}{20 d}$$
$$+\frac{d^2 b^2\ln(F)^2 F^{\frac{xad+ac+b}{dx+c}} x^3}{60}+\frac{d b^2\ln(F)^2 F^{\frac{xad+ac+b}{dx+c}} c x^2}{20}+\frac{b^2\ln(F)^2 F^{\frac{xad+ac+b}{dx+c}} c^2 x}{20}+\frac{b^2\ln(F)^2 F^{\frac{xad+ac+b}{dx+c}} c^3}{60 d}$$
$$+\frac{d b^3\ln(F)^3 F^{\frac{xad+ac+b}{dx+c}} x^2}{120}+\frac{b^3\ln(F)^3 F^{\frac{xad+ac+b}{dx+c}} c x}{60}+\frac{b^3\ln(F)^3 F^{\frac{xad+ac+b}{dx+c}} c^2}{120 d}+\frac{b^4\ln(F)^4 F^{\frac{xad+ac+b}{dx+c}} x}{120}+\frac{b^4\ln(F)^4 F^{\frac{xad+ac+b}{dx+c}} c}{120 d}$$
$$+\frac{b^5\ln(F)^5 F^a \operatorname{Ei}_1\left(-\frac{b\ln(F)}{dx+c}\right)}{120 d}$$

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

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(dx+c)^6}\, dx$$

Optimal(type 3, 92 leaves, 1 step):

$$-\frac{F^{a+\frac{b}{dx+c}}\left(24\,(dx+c)^4-24\,b\,(dx+c)^3\ln(F)+12\,b^2\,(dx+c)^2\ln(F)^2-4\,b^3\,(dx+c)\ln(F)^3+b^4\ln(F)^4\right)}{b^5\,d\,(dx+c)^4\ln(F)^5}$$

Result(type 3, 328 leaves):

$$\frac{1}{(dx+c)^5}\left(-\frac{24\,d^4x^5\,\mathrm{e}^{\left(a+\frac{b}{dx+c}\right)\ln(F)}}{b^5\ln(F)^5}-\frac{\left(b^4\ln(F)^4-8\ln(F)^3b^3c+36\ln(F)^2b^2c^2-96\ln(F)\,b\,c^3+120\,c^4\right)x\,\mathrm{e}^{\left(a+\frac{b}{dx+c}\right)\ln(F)}}{\ln(F)^5b^5}\right.$$
$$+\frac{4\,d\left(\ln(F)^3b^3-9\ln(F)^2b^2c+36\ln(F)\,b\,c^2-60\,c^3\right)x^2\,\mathrm{e}^{\left(a+\frac{b}{dx+c}\right)\ln(F)}}{b^5\ln(F)^5}-\frac{12\,d^2\left(\ln(F)^2b^2-8\,b\,c\ln(F)+20\,c^2\right)x^3\,\mathrm{e}^{\left(a+\frac{b}{dx+c}\right)\ln(F)}}{b^5\ln(F)^5}$$
$$\left.+\frac{24\,d^3\,(b\ln(F)-5\,c)\,x^4\,\mathrm{e}^{\left(a+\frac{b}{dx+c}\right)\ln(F)}}{b^5\ln(F)^5}-\frac{\left(b^4\ln(F)^4-4\ln(F)^3b^3c+12\ln(F)^2b^2c^2-24\ln(F)\,b\,c^3+24\,c^4\right)c\,\mathrm{e}^{\left(a+\frac{b}{dx+c}\right)\ln(F)}}{\ln(F)^5b^5\,d}\right)$$

Problem 84: Result more than twice size of optimal antiderivative.

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

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

$$\frac{F^a\,(dx+c)^8\,\mathrm{Ei}_5\left(-\frac{b\ln(F)}{(dx+c)^2}\right)}{2\,d}$$

Result(type 4, 645 leaves):

$$\frac{F^a d^7 F^{\frac{b}{(dx+c)^2}}\,x^8}{8}+\frac{F^a F^{\frac{b}{(dx+c)^2}}\,c^8}{8\,d}+F^a F^{\frac{b}{(dx+c)^2}}\,c^7x+F^a d^6F^{\frac{b}{(dx+c)^2}}\,c\,x^7+\frac{7\,F^a d^5F^{\frac{b}{(dx+c)^2}}\,c^2x^6}{2}+7\,F^a d^4F^{\frac{b}{(dx+c)^2}}\,c^3x^5+\frac{35\,F^a d^3F^{\frac{b}{(dx+c)^2}}\,c^4x^4}{4}$$
$$+7\,F^a d^2F^{\frac{b}{(dx+c)^2}}\,c^5x^3+\frac{7\,F^a d\,F^{\frac{b}{(dx+c)^2}}\,c^6x^2}{2}+\frac{F^a b^4\ln(F)^4\,\mathrm{Ei}_1\left(-\frac{b\ln(F)}{(dx+c)^2}\right)}{48\,d}+\frac{F^a b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c^6}{24\,d}+\frac{F^a b^2\ln(F)^2F^{\frac{b}{(dx+c)^2}}\,c^4}{48\,d}$$
$$+\frac{F^a b^3\ln(F)^3F^{\frac{b}{(dx+c)^2}}\,c^2}{48\,d}+\frac{F^a d^5\,b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,x^6}{24}+\frac{F^a d^3b^2\ln(F)^2F^{\frac{b}{(dx+c)^2}}\,x^4}{48}+\frac{F^a d\,b^3\ln(F)^3F^{\frac{b}{(dx+c)^2}}\,x^2}{48}+\frac{F^a b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c^5x}{4}$$
$$+\frac{F^a b^2\ln(F)^2F^{\frac{b}{(dx+c)^2}}\,c^3x}{12}+\frac{F^a b^3\ln(F)^3F^{\frac{b}{(dx+c)^2}}\,c\,x}{24}+\frac{F^a d^4\,b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c\,x^5}{4}+\frac{5\,F^a d^3\,b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c^2x^4}{8}$$
$$+\frac{5\,F^a d^2\,b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c^3x^3}{6}+\frac{5\,F^a d\,b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c^4x^2}{8}+\frac{F^a d^2b^2\ln(F)^2F^{\frac{b}{(dx+c)^2}}\,c\,x^3}{12}+\frac{F^a d\,b^2\ln(F)^2F^{\frac{b}{(dx+c)^2}}\,c^2x^2}{8}$$

Problem 85: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 218 leaves, 1 step):

$$\frac{1}{2d}\left(F^a (dx+c)^{11}\left(\frac{64\sqrt{\pi}\,\operatorname{erfc}\left(\sqrt{-\frac{b\ln(F)}{(dx+c)^2}}\right)}{10395} - \frac{64\,e^{\frac{b\ln(F)}{(dx+c)^2}}}{10395\sqrt{-\frac{b\ln(F)}{(dx+c)^2}}} + \frac{32\,e^{\frac{b\ln(F)}{(dx+c)^2}}}{10395\left(-\frac{b\ln(F)}{(dx+c)^2}\right)^{3/2}} - \frac{16\,e^{\frac{b\ln(F)}{(dx+c)^2}}}{3465\left(-\frac{b\ln(F)}{(dx+c)^2}\right)^{5/2}} + \frac{8\,e^{\frac{b\ln(F)}{(dx+c)^2}}}{693\left(-\frac{b\ln(F)}{(dx+c)^2}\right)^{7/2}} - \frac{4\,e^{\frac{b\ln(F)}{(dx+c)^2}}}{99\left(-\frac{b\ln(F)}{(dx+c)^2}\right)^{9/2}} + \frac{2\,e^{\frac{b\ln(F)}{(dx+c)^2}}}{11\left(-\frac{b\ln(F)}{(dx+c)^2}\right)^{11/2}}\right)\left(-\frac{b\ln(F)}{(dx+c)^2}\right)^{11/2}\right)$$

Result(type 4, 1172 leaves):

$$\frac{2F^a b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c^8 x}{11} + \frac{2F^a d^8 b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,x^9}{99} + \frac{4F^a d^6 b^2\ln(F)^2 F^{\frac{b}{(dx+c)^2}}\,x^7}{693} + \frac{8F^a d^4 b^3\ln(F)^3 F^{\frac{b}{(dx+c)^2}}\,x^5}{3465}$$
$$+ \frac{16F^a d^2 b^4\ln(F)^4 F^{\frac{b}{(dx+c)^2}}\,x^3}{10395} + \frac{2F^a b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c^9}{99\,d} + \frac{4F^a b^2\ln(F)^2 F^{\frac{b}{(dx+c)^2}}\,c^7}{693\,d} + \frac{8F^a b^3\ln(F)^3 F^{\frac{b}{(dx+c)^2}}\,c^5}{3465\,d}$$
$$+ \frac{16F^a b^4\ln(F)^4 F^{\frac{b}{(dx+c)^2}}\,c^3}{10395\,d} + \frac{32F^a b^5\ln(F)^5 F^{\frac{b}{(dx+c)^2}}\,c}{10395\,d} + \frac{16F^a b^4\ln(F)^4 F^{\frac{b}{(dx+c)^2}}\,c^2 x}{3465} + \frac{4F^a b^2\ln(F)^2 F^{\frac{b}{(dx+c)^2}}\,c^6 x}{99}$$
$$+ \frac{8F^a b^3\ln(F)^3 F^{\frac{b}{(dx+c)^2}}\,c^4 x}{693} + \frac{8F^a d^6 b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c^2 x^7}{11} + \frac{56F^a d^5 b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c^3 x^6}{33} + \frac{28F^a d^4 b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c^4 x^5}{11}$$
$$+ \frac{28F^a d^3 b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c^5 x^4}{11} + \frac{56F^a d^2 b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c^6 x^3}{33} + \frac{8F^a d\,b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c^7 x^2}{11} + \frac{4F^a d^5 b^2\ln(F)^2 F^{\frac{b}{(dx+c)^2}}\,c x^6}{99}$$
$$+ \frac{4F^a d^4 b^2\ln(F)^2 F^{\frac{b}{(dx+c)^2}}\,c^2 x^5}{33} + \frac{20F^a d^3 b^2\ln(F)^2 F^{\frac{b}{(dx+c)^2}}\,c^3 x^4}{99} + \frac{20F^a d^2 b^2\ln(F)^2 F^{\frac{b}{(dx+c)^2}}\,c^4 x^3}{99} + \frac{4F^a d\,b^2\ln(F)^2 F^{\frac{b}{(dx+c)^2}}\,c^5 x^2}{33}$$
$$+ \frac{8F^a d^3 b^3\ln(F)^3 F^{\frac{b}{(dx+c)^2}}\,c x^4}{693} + \frac{16F^a d^2 b^3\ln(F)^3 F^{\frac{b}{(dx+c)^2}}\,c^2 x^3}{693} + \frac{16F^a d\,b^3\ln(F)^3 F^{\frac{b}{(dx+c)^2}}\,c^3 x^2}{693} + \frac{16F^a d\,b^4\ln(F)^4 F^{\frac{b}{(dx+c)^2}}\,c x^2}{3465}$$
$$+ \frac{2F^a d^7 b\ln(F)\,F^{\frac{b}{(dx+c)^2}}\,c x^8}{11} - \frac{32F^a b^6\ln(F)^6\sqrt{\pi}\,\operatorname{erf}\left(\frac{\sqrt{-b\ln(F)}}{dx+c}\right)}{10395\,d\sqrt{-b\ln(F)}} + \frac{32F^a b^5\ln(F)^5 F^{\frac{b}{(dx+c)^2}}\,x}{10395} + F^a d^9 F^{\frac{b}{(dx+c)^2}}\,c x^{10} + 5F^a d^8 F^{\frac{b}{(dx+c)^2}}\,c^2 x^9$$

$$+ 15 F^a d^7 F^{\frac{b}{(d x+c)^2}} c^3 x^8 + 30 F^a d^6 F^{\frac{b}{(d x+c)^2}} c^4 x^7 + 42 F^a d^5 F^{\frac{b}{(d x+c)^2}} c^5 x^6 + 42 F^a d^4 F^{\frac{b}{(d x+c)^2}} c^6 x^5 + 30 F^a d^3 F^{\frac{b}{(d x+c)^2}} c^7 x^4 + 15 F^a d^2 F^{\frac{b}{(d x+c)^2}} c^8 x^3$$

$$+ 5 F^a d F^{\frac{b}{(d x+c)^2}} c^9 x^2 + F^a F^{\frac{b}{(d x+c)^2}} c^{10} x + \frac{F^a d^{10} F^{\frac{b}{(d x+c)^2}} x^{11}}{11} + \frac{F^a F^{\frac{b}{(d x+c)^2}} c^{11}}{11 d}$$

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Problem 86: Result more than twice size of optimal antiderivative.
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$$\int F^{a+\frac{b}{(d x+c)^2}} (d x+c)^4 \, dx$$

```
Optimal(type 4, 118 leaves, 5 steps):
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$$\frac{F^{a+\frac{b}{(d x+c)^2}} (d x+c)^5}{5 d} + \frac{2 b F^{a+\frac{b}{(d x+c)^2}} (d x+c)^3 \ln(F)}{15 d} + \frac{4 b^2 F^{a+\frac{b}{(d x+c)^2}} (d x+c) \ln(F)^2}{15 d} - \frac{4 b^{5/2} F^a \operatorname{erfi}\left(\frac{\sqrt{b}\,\sqrt{\ln(F)}}{d x+c}\right) \ln(F)^{5/2} \sqrt{\pi}}{15 d}$$

```
Result(type 4, 323 leaves):
```

$$\frac{F^a d^4 F^{\frac{b}{(d x+c)^2}} x^5}{5} + F^a d^3 F^{\frac{b}{(d x+c)^2}} c x^4 + 2 F^a d^2 F^{\frac{b}{(d x+c)^2}} c^2 x^3 + 2 F^a d F^{\frac{b}{(d x+c)^2}} c^3 x^2 + F^a F^{\frac{b}{(d x+c)^2}} c^4 x + \frac{F^a F^{\frac{b}{(d x+c)^2}} c^5}{5 d}$$

$$+ \frac{2 F^a d^2 b \ln(F) F^{\frac{b}{(d x+c)^2}} x^3}{15} + \frac{2 F^a d b \ln(F) F^{\frac{b}{(d x+c)^2}} c x^2}{5} + \frac{2 F^a b \ln(F) F^{\frac{b}{(d x+c)^2}} c^2 x}{5} + \frac{2 F^a b \ln(F) F^{\frac{b}{(d x+c)^2}} c^3}{15 d} + \frac{4 F^a b^2 \ln(F)^2 F^{\frac{b}{(d x+c)^2}} x}{15}$$

$$+ \frac{4 F^a b^2 \ln(F)^2 F^{\frac{b}{(d x+c)^2}} c}{15 d} - \frac{4 F^a b^3 \ln(F)^3 \sqrt{\pi} \operatorname{erf}\left(\frac{\sqrt{-b \ln(F)}}{d x+c}\right)}{15 d \sqrt{-b \ln(F)}}$$

```
Problem 92: Unable to integrate problem.
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$$\int F^{a+\frac{b}{(d x+c)^3}} (d x+c)^8 \, dx$$

```
Optimal(type 4, 113 leaves, 4 steps):
```

$$\frac{F^{a+\frac{b}{(d x+c)^3}} (d x+c)^9}{9 d} + \frac{b F^{a+\frac{b}{(d x+c)^3}} (d x+c)^6 \ln(F)}{18 d} + \frac{b^2 F^{a+\frac{b}{(d x+c)^3}} (d x+c)^3 \ln(F)^2}{18 d} - \frac{b^3 F^a \operatorname{Ei}\left(\frac{b \ln(F)}{(d x+c)^3}\right) \ln(F)^3}{18 d}$$

```
Result(type 8, 23 leaves):
```

$$\int F^{a+\frac{b}{(d x+c)^3}} (d x+c)^8 \, dx$$

Problem 93: Unable to integrate problem.

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

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

$$\frac{F^{a+\frac{b}{(dx+c)^3}}(dx+c)^3}{3\,d}-\frac{b\,F^a\,\mathrm{Ei}\left(\frac{b\ln(F)}{(dx+c)^3}\right)\ln(F)}{3\,d}$$

Result(type 8, 23 leaves):

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

Problem 95: Result more than twice size of optimal antiderivative.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{(dx+c)^7}\,dx$$

Optimal(type 3, 58 leaves, 2 steps):

$$\frac{F^{a+\frac{b}{(dx+c)^3}}}{3\,b^2\,d\ln(F)^2}-\frac{F^{a+\frac{b}{(dx+c)^3}}}{3\,b\,d\,(dx+c)^3\ln(F)}$$

Result(type 3, 260 leaves):

$$\frac{1}{(dx+c)^6}\left(\frac{d^5x^6\,\mathrm{e}^{\left(a+\frac{b}{(dx+c)^3}\right)\ln(F)}}{3\ln(F)^2b^2}-\frac{c^2\left(-2c^3+b\ln(F)\right)x\,\mathrm{e}^{\left(a+\frac{b}{(dx+c)^3}\right)\ln(F)}}{\ln(F)^2b^2}-\frac{c^3\left(-c^3+b\ln(F)\right)\mathrm{e}^{\left(a+\frac{b}{(dx+c)^3}\right)\ln(F)}}{3\ln(F)^2b^2d}\right.$$
$$-\frac{d^2\left(-20c^3+b\ln(F)\right)x^3\,\mathrm{e}^{\left(a+\frac{b}{(dx+c)^3}\right)\ln(F)}}{3\ln(F)^2b^2}+\frac{5\,d^3c^2x^4\,\mathrm{e}^{\left(a+\frac{b}{(dx+c)^3}\right)\ln(F)}}{\ln(F)^2b^2}+\frac{2\,d^4c\,x^5\,\mathrm{e}^{\left(a+\frac{b}{(dx+c)^3}\right)\ln(F)}}{\ln(F)^2b^2}$$
$$\left.-\frac{c\,d\left(-5c^3+b\ln(F)\right)x^2\,\mathrm{e}^{\left(a+\frac{b}{(dx+c)^3}\right)\ln(F)}}{\ln(F)^2b^2}\right)$$

Problem 96: Result more than twice size of optimal antiderivative.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{(dx+c)^{10}}\,dx$$

Optimal(type 3, 90 leaves, 3 steps):

$$-\frac{2 F^{a+\frac{b}{(d x+c)^3}}}{3 b^3 d \ln(F)^3}+\frac{2 F^{a+\frac{b}{(d x+c)^3}}}{3 b^2 d (d x+c)^3 \ln(F)^2}-\frac{F^{a+\frac{b}{(d x+c)^3}}}{3 b d (d x+c)^6 \ln(F)}$$

Result(type 3, 433 leaves):

$$\frac{1}{(d x+c)^9}\left(-\frac{2 d^8 x^9 e^{\left(a+\frac{b}{(d x+c)^3}\right)\ln(F)}}{3 \ln(F)^3 b^3}-\frac{c^2 \left(6 c^6-4 \ln(F) b c^3+\ln(F)^2 b^2\right) x e^{\left(a+\frac{b}{(d x+c)^3}\right)\ln(F)}}{\ln(F)^3 b^3}\right.$$
$$-\frac{c^3 \left(2 c^6-2 \ln(F) b c^3+\ln(F)^2 b^2\right) e^{\left(a+\frac{b}{(d x+c)^3}\right)\ln(F)}}{3 \ln(F)^3 b^3 d}-\frac{d^2 \left(168 c^6-40 \ln(F) b c^3+\ln(F)^2 b^2\right) x^3 e^{\left(a+\frac{b}{(d x+c)^3}\right)\ln(F)}}{3 \ln(F)^3 b^3}$$
$$+\frac{2 d^5 \left(-84 c^3+b \ln(F)\right) x^6 e^{\left(a+\frac{b}{(d x+c)^3}\right)\ln(F)}}{3 \ln(F)^3 b^3}-\frac{24 d^6 c^2 x^7 e^{\left(a+\frac{b}{(d x+c)^3}\right)\ln(F)}}{\ln(F)^3 b^3}-\frac{6 d^7 c x^8 e^{\left(a+\frac{b}{(d x+c)^3}\right)\ln(F)}}{\ln(F)^3 b^3}$$
$$-\frac{c d \left(24 c^6-10 \ln(F) b c^3+\ln(F)^2 b^2\right) x^2 e^{\left(a+\frac{b}{(d x+c)^3}\right)\ln(F)}}{\ln(F)^3 b^3}+\frac{4 c d^4 \left(-21 c^3+b \ln(F)\right) x^5 e^{\left(a+\frac{b}{(d x+c)^3}\right)\ln(F)}}{\ln(F)^3 b^3}$$
$$\left.+\frac{2 c^2 d^3 \left(-42 c^3+5 b \ln(F)\right) x^4 e^{\left(a+\frac{b}{(d x+c)^3}\right)\ln(F)}}{\ln(F)^3 b^3}\right)$$

Problem 97: Unable to integrate problem.

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

Optimal(type 4, 43 leaves, 1 step):

$$\frac{F^a (d x+c)^2 \Gamma\left(-\frac{2}{3}, -\frac{b \ln(F)}{(d x+c)^3}\right) \left(-\frac{b \ln(F)}{(d x+c)^3}\right)^{2/3}}{3 d}$$

Result(type 8, 21 leaves):

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

Problem 98: Unable to integrate problem.

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

Optimal(type 4, 50 leaves, 1 step):

$$-\frac{F^{a}\,(dx+c)\,\Gamma\left(\frac{1}{n},\,-b\,(dx+c)^{n}\ln(F)\right)}{d\,n\,\left(-b\,(dx+c)^{n}\ln(F)\right)^{\frac{1}{n}}}$$

Result(type 8, 15 leaves):

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

Problem 103: Result more than twice size of optimal antiderivative.

$$\int F^{a+b\,(dx+c)^{2}}\,(fx+e)^{5}\,dx$$

Optimal(type 4, 474 leaves, 14 steps):

$$\frac{f^{5}F^{a+b\,(dx+c)^{2}}}{b^{3}d^{6}\ln(F)^{3}}-\frac{5f^{3}\,(-cf+de)^{2}F^{a+b\,(dx+c)^{2}}}{b^{2}d^{6}\ln(F)^{2}}-\frac{15f^{4}\,(-cf+de)\,F^{a+b\,(dx+c)^{2}}\,(dx+c)}{4\,b^{2}d^{6}\ln(F)^{2}}-\frac{f^{5}F^{a+b\,(dx+c)^{2}}\,(dx+c)^{2}}{b^{2}d^{6}\ln(F)^{2}}+\frac{5f\,(-cf+de)^{4}F^{a+b\,(dx+c)^{2}}}{2\,b\,d^{6}\ln(F)}$$
$$+\frac{5f^{2}\,(-cf+de)^{3}F^{a+b\,(dx+c)^{2}}\,(dx+c)}{b\,d^{6}\ln(F)}+\frac{5f^{3}\,(-cf+de)^{2}F^{a+b\,(dx+c)^{2}}\,(dx+c)^{2}}{b\,d^{6}\ln(F)}+\frac{5f^{4}\,(-cf+de)\,F^{a+b\,(dx+c)^{2}}\,(dx+c)^{3}}{2\,b\,d^{6}\ln(F)}$$
$$+\frac{f^{5}F^{a+b\,(dx+c)^{2}}\,(dx+c)^{4}}{2\,b\,d^{6}\ln(F)}+\frac{15f^{4}\,(-cf+de)\,F^{a}\,\mathrm{erfi}\left((dx+c)\sqrt{b}\,\sqrt{\ln(F)}\right)\sqrt{\pi}}{8\,b^{5/2}d^{6}\ln(F)^{5/2}}-\frac{5f^{2}\,(-cf+de)^{3}F^{a}\,\mathrm{erfi}\left((dx+c)\sqrt{b}\,\sqrt{\ln(F)}\right)\sqrt{\pi}}{2\,b^{3/2}d^{6}\ln(F)^{3/2}}$$
$$+\frac{(-cf+de)^{5}F^{a}\,\mathrm{erfi}\left((dx+c)\sqrt{b}\,\sqrt{\ln(F)}\right)\sqrt{\pi}}{2\,d^{6}\sqrt{b}\,\sqrt{\ln(F)}}$$

Result(type 4, 1546 leaves):

$$\frac{f^{5}x^{4}F^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{2\ln(F)\,b\,d^{2}}+\frac{f^{5}c^{4}F^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{2\,d^{6}\ln(F)\,b}-\frac{9f^{5}c^{2}F^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{4\,d^{6}\ln(F)^{2}b^{2}}-\frac{f^{5}x^{2}F^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{\ln(F)^{2}b^{2}d^{4}}$$
$$-\frac{5e^{2}f^{3}F^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{\ln(F)^{2}b^{2}d^{4}}+\frac{5e^{4}fF^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{2\ln(F)\,b\,d^{2}}+\frac{f^{5}F^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{\ln(F)^{3}b^{3}d^{6}}+\frac{5ef^{4}x^{3}F^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{2\ln(F)\,b\,d^{2}}$$
$$-\frac{5ef^{4}c^{3}F^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{2\,d^{5}\ln(F)\,b}+\frac{25ef^{4}cF^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{4\,d^{5}\ln(F)^{2}b^{2}}-\frac{15ef^{4}xF^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{4\ln(F)^{2}b^{2}d^{4}}+\frac{5e^{2}f^{3}x^{2}F^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{\ln(F)\,b\,d^{2}}$$
$$+\frac{5e^{2}f^{3}c^{2}F^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{d^{4}\ln(F)\,b}+\frac{5e^{3}f^{2}xF^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{\ln(F)\,b\,d^{2}}-\frac{5e^{3}f^{2}cF^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{d^{3}\ln(F)\,b}$$
$$-\frac{5e^{3}f^{2}c^{2}\sqrt{\pi}\,F^{a}\,\mathrm{erf}\left(-d\sqrt{-b\ln(F)}\,x+\frac{c\,b\ln(F)}{\sqrt{-b\ln(F)}}\right)}{d^{3}\sqrt{-b\ln(F)}}+\frac{5e^{4}fc\sqrt{\pi}\,F^{a}\,\mathrm{erf}\left(-d\sqrt{-b\ln(F)}\,x+\frac{c\,b\ln(F)}{\sqrt{-b\ln(F)}}\right)}{2\,d^{2}\sqrt{-b\ln(F)}}-\frac{5ef^{4}cx^{2}F^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{2\,d^{3}\ln(F)\,b}$$
$$+\frac{5ef^{4}c^{2}xF^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{2\,d^{4}\ln(F)\,b}-\frac{5ef^{4}c^{4}\sqrt{\pi}\,F^{a}\,\mathrm{erf}\left(-d\sqrt{-b\ln(F)}\,x+\frac{c\,b\ln(F)}{\sqrt{-b\ln(F)}}\right)}{2\,d^{5}\sqrt{-b\ln(F)}}-\frac{5e^{2}f^{3}cxF^{b\,d^{2}x^{2}+2\,b\,c\,d\,x+b\,c^{2}+a}}{d^{3}\ln(F)\,b}$$

$$+\frac{5 e^2 f^3 c^3 \sqrt{\pi}\, F^a \operatorname{erf}\left(-d\sqrt{-b\ln(F)}\, x+\frac{c b \ln(F)}{\sqrt{-b\ln(F)}}\right)}{d^4\sqrt{-b\ln(F)}}-\frac{f^5 c x^3 F^{b d^2 x^2+2 b c d x+b c^2+a}}{2 d^3 \ln(F)\, b}+\frac{f^5 c^2 x^2 F^{b d^2 x^2+2 b c d x+b c^2+a}}{2 d^4 \ln(F)\, b}$$

$$-\frac{f^5 c^3 x F^{b d^2 x^2+2 b c d x+b c^2+a}}{2 d^5 \ln(F)\, b}+\frac{f^5 c^5 \sqrt{\pi}\, F^a \operatorname{erf}\left(-d\sqrt{-b\ln(F)}\, x+\frac{c b \ln(F)}{\sqrt{-b\ln(F)}}\right)}{2 d^6\sqrt{-b\ln(F)}}+\frac{7 f^5 c x F^{b d^2 x^2+2 b c d x+b c^2+a}}{4 d^5 \ln(F)^2 b^2}$$

$$+\frac{15 e f^4 c^2 \sqrt{\pi}\, F^a \operatorname{erf}\left(-d\sqrt{-b\ln(F)}\, x+\frac{c b \ln(F)}{\sqrt{-b\ln(F)}}\right)}{2 d^5 \ln(F)\, b\sqrt{-b\ln(F)}}-\frac{15 e^2 f^3 c \sqrt{\pi}\, F^a \operatorname{erf}\left(-d\sqrt{-b\ln(F)}\, x+\frac{c b \ln(F)}{\sqrt{-b\ln(F)}}\right)}{2 d^4 \ln(F)\, b\sqrt{-b\ln(F)}}$$

$$-\frac{5 f^5 c^3 \sqrt{\pi}\, F^a \operatorname{erf}\left(-d\sqrt{-b\ln(F)}\, x+\frac{c b \ln(F)}{\sqrt{-b\ln(F)}}\right)}{2 d^6 \ln(F)\, b\sqrt{-b\ln(F)}}+\frac{15 f^5 c \sqrt{\pi}\, F^a \operatorname{erf}\left(-d\sqrt{-b\ln(F)}\, x+\frac{c b \ln(F)}{\sqrt{-b\ln(F)}}\right)}{8 d^6 \ln(F)^2 b^2\sqrt{-b\ln(F)}}$$

$$-\frac{15 e f^4 \sqrt{\pi}\, F^a \operatorname{erf}\left(-d\sqrt{-b\ln(F)}\, x+\frac{c b \ln(F)}{\sqrt{-b\ln(F)}}\right)}{8 \ln(F)^2 b^2 d^5\sqrt{-b\ln(F)}}+\frac{5 e^3 f^2 \sqrt{\pi}\, F^a \operatorname{erf}\left(-d\sqrt{-b\ln(F)}\, x+\frac{c b \ln(F)}{\sqrt{-b\ln(F)}}\right)}{2 \ln(F)\, b d^3\sqrt{-b\ln(F)}}$$

$$-\frac{e^5 \sqrt{\pi}\, F^a \operatorname{erf}\left(-d\sqrt{-b\ln(F)}\, x+\frac{c b \ln(F)}{\sqrt{-b\ln(F)}}\right)}{2 d\sqrt{-b\ln(F)}}$$

Problem 104: Result more than twice size of optimal antiderivative.

$$\int F^{a+b(dx+c)^2}(fx+e)^4\, dx$$

Optimal(type 4, 349 leaves, 11 steps):

$$-\frac{2 f^3(-cf+de)F^{a+b(dx+c)^2}}{b^2 d^5\ln(F)^2}-\frac{3 f^4 F^{a+b(dx+c)^2}(dx+c)}{4 b^2 d^5 \ln(F)^2}+\frac{2 f(-cf+de)^3 F^{a+b(dx+c)^2}}{b d^5 \ln(F)}+\frac{3 f^2(-cf+de)^2 F^{a+b(dx+c)^2}(dx+c)}{b d^5\ln(F)}$$

$$+\frac{2 f^3(-cf+de)F^{a+b(dx+c)^2}(dx+c)^2}{b d^5 \ln(F)}+\frac{f^4 F^{a+b(dx+c)^2}(dx+c)^3}{2 b d^5\ln(F)}+\frac{3 f^4 F^a \operatorname{erfi}\left((dx+c)\sqrt{b}\sqrt{\ln(F)}\right)\sqrt{\pi}}{8 b^{5/2} d^5 \ln(F)^{5/2}}$$

$$-\frac{3 f^2(-cf+de)^2 F^a \operatorname{erfi}\left((dx+c)\sqrt{b}\sqrt{\ln(F)}\right)\sqrt{\pi}}{2 b^{3/2} d^5\ln(F)^{3/2}}+\frac{(-cf+de)^4 F^a \operatorname{erfi}\left((dx+c)\sqrt{b}\sqrt{\ln(F)}\right)\sqrt{\pi}}{2 d^5\sqrt{b}\sqrt{\ln(F)}}$$

Result(type 4, 997 leaves):

$$-\frac{e^4 \sqrt{\pi}\, F^a \operatorname{erf}\left(-d\sqrt{-b\ln(F)}\, x+\frac{c b \ln(F)}{\sqrt{-b\ln(F)}}\right)}{2 d\sqrt{-b\ln(F)}}+\frac{f^4 x^3 F^{b d^2 x^2+2 b c d x+b c^2+a}}{2\ln(F)\, b d^2}-\frac{f^4 c x^2 F^{b d^2 x^2+2 b c d x+b c^2+a}}{2 d^3 \ln(F)\, b}+\frac{f^4 c^2 x F^{b d^2 x^2+2 b c d x+b c^2+a}}{2 d^4\ln(F)\, b}$$

$$-\frac{f^4 c^3 F^{b d^2 x^2+2 b c d x+b c^2+a}}{2 d^5 \ln(F) b}-\frac{f^4 c^4 \sqrt{\pi} F^a \operatorname{erf}\left(-d \sqrt{-b \ln(F)} x+\frac{c b \ln(F)}{\sqrt{-b \ln(F)}}\right)}{2 d^5 \sqrt{-b \ln(F)}}+\frac{3 f^4 c^2 \sqrt{\pi} F^a \operatorname{erf}\left(-d \sqrt{-b \ln(F)} x+\frac{c b \ln(F)}{\sqrt{-b \ln(F)}}\right)}{2 d^5 \ln(F) b \sqrt{-b \ln(F)}}$$

$$+\frac{5 f^4 c F^{b d^2 x^2+2 b c d x+b c^2+a}}{4 d^5 \ln(F)^2 b^2}-\frac{3 f^4 x F^{b d^2 x^2+2 b c d x+b c^2+a}}{4 \ln(F)^2 b^2 d^4}-\frac{3 f^4 \sqrt{\pi} F^a \operatorname{erf}\left(-d \sqrt{-b \ln(F)} x+\frac{c b \ln(F)}{\sqrt{-b \ln(F)}}\right)}{8 \ln(F)^2 b^2 d^5 \sqrt{-b \ln(F)}}+\frac{2 e f^3 x^2 F^{b d^2 x^2+2 b c d x+b c^2+a}}{\ln(F) b d^2}$$

$$-\frac{2 e f^3 c x F^{b d^2 x^2+2 b c d x+b c^2+a}}{d^3 \ln(F) b}+\frac{2 e f^3 c^2 F^{b d^2 x^2+2 b c d x+b c^2+a}}{d^4 \ln(F) b}+\frac{2 e f^3 c^3 \sqrt{\pi} F^a \operatorname{erf}\left(-d \sqrt{-b \ln(F)} x+\frac{c b \ln(F)}{\sqrt{-b \ln(F)}}\right)}{d^4 \sqrt{-b \ln(F)}}$$

$$-\frac{3 e f^3 c \sqrt{\pi} F^a \operatorname{erf}\left(-d \sqrt{-b \ln(F)} x+\frac{c b \ln(F)}{\sqrt{-b \ln(F)}}\right)}{d^4 \ln(F) b \sqrt{-b \ln(F)}}-\frac{2 e f^3 F^{b d^2 x^2+2 b c d x+b c^2+a}}{\ln(F)^2 b^2 d^4}+\frac{3 e^2 f^2 x F^{b d^2 x^2+2 b c d x+b c^2+a}}{\ln(F) b d^2}$$

$$-\frac{3 e^2 f^2 c F^{b d^2 x^2+2 b c d x+b c^2+a}}{d^3 \ln(F) b}-\frac{3 e^2 f^2 c^2 \sqrt{\pi} F^a \operatorname{erf}\left(-d \sqrt{-b \ln(F)} x+\frac{c b \ln(F)}{\sqrt{-b \ln(F)}}\right)}{d^3 \sqrt{-b \ln(F)}}+\frac{3 e^2 f^2 \sqrt{\pi} F^a \operatorname{erf}\left(-d \sqrt{-b \ln(F)} x+\frac{c b \ln(F)}{\sqrt{-b \ln(F)}}\right)}{2 \ln(F) b d^3 \sqrt{-b \ln(F)}}$$

$$+\frac{2 e^3 f F^{b d^2 x^2+2 b c d x+b c^2+a}}{\ln(F) b d^2}+\frac{2 e^3 f c \sqrt{\pi} F^a \operatorname{erf}\left(-d \sqrt{-b \ln(F)} x+\frac{c b \ln(F)}{\sqrt{-b \ln(F)}}\right)}{d^2 \sqrt{-b \ln(F)}}$$

Problem 107: Unable to integrate problem.

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

Optimal(type 4, 111 leaves, 5 steps):

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

Result(type 8, 20 leaves):

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

Problem 111: Unable to integrate problem.

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

Optimal(type 4, 134 leaves, 6 steps):

$$\frac{b^2 e^{\frac{e}{(dx+c)^3}} (dx+c)^3}{3 d^3} - \frac{b^2 e \operatorname{Ei}\left(\frac{e}{(dx+c)^3}\right)}{3 d^3} - \frac{2 b (-a d + b c) \left(-\frac{e}{(dx+c)^3}\right)^{2/3} (dx+c)^2 \Gamma\left(-\frac{2}{3}, -\frac{e}{(dx+c)^3}\right)}{3 d^3}$$
$$+ \frac{(-a d + b c)^2 \left(-\frac{e}{(dx+c)^3}\right)^{1/3} (dx+c) \Gamma\left(-\frac{1}{3}, -\frac{e}{(dx+c)^3}\right)}{3 d^3}$$

Result(type 8, 20 leaves):

$$\int e^{\frac{e}{(dx+c)^3}} (bx+a)^2 \, dx$$

Problem 112: Result more than twice size of optimal antiderivative.

$$\int \frac{F^{e+\frac{f(bx+a)}{dx+c}}}{hx+g} \, dx$$

Optimal(type 4, 104 leaves, 5 steps):

$$-\frac{F^{e+\frac{bf}{d}} \operatorname{Ei}\left(-\frac{(-a d + b c) f \ln(F)}{d (dx+c)}\right)}{h} + \frac{F^{e+\frac{f(-a h + b g)}{-h c + g d}} \operatorname{Ei}\left(-\frac{(-a d + b c) f (hx+g) \ln(F)}{(-h c + g d) (dx+c)}\right)}{h}$$

Result(type 4, 431 leaves):

$$-\frac{d F^{\frac{afh - bfg + ceh - deg}{hc - gd}} \operatorname{Ei}_1\left(-\frac{f(ad - bc) \ln(F)}{d (dx+c)} - \frac{(fb + de) \ln(F)}{d} - \frac{-\ln(F) afh + \ln(F) bfg - \ln(F) ceh + \ln(F) deg}{hc - gd}\right) a}{h (ad - bc)}$$
$$+ \frac{F^{\frac{afh - bfg + ceh - deg}{hc - gd}} \operatorname{Ei}_1\left(-\frac{f(ad - bc) \ln(F)}{d (dx+c)} - \frac{(fb + de) \ln(F)}{d} - \frac{-\ln(F) afh + \ln(F) bfg - \ln(F) ceh + \ln(F) deg}{hc - gd}\right) b c}{h (ad - bc)}$$
$$+ \frac{d F^{\frac{fb + de}{d}} \operatorname{Ei}_1\left(-\frac{f(ad - bc) \ln(F)}{d (dx+c)} - \frac{(fb + de) \ln(F)}{d} - \frac{-\ln(F) bf - de \ln(F)}{d}\right) a}{h (ad - bc)}$$
$$- \frac{F^{\frac{fb + de}{d}} \operatorname{Ei}_1\left(-\frac{f(ad - bc) \ln(F)}{d (dx+c)} - \frac{(fb + de) \ln(F)}{d} - \frac{-\ln(F) bf - de \ln(F)}{d}\right) b c}{h (ad - bc)}$$

Problem 113: Result more than twice size of optimal antiderivative.

$$\int \frac{F^{e+\frac{f(bx+a)}{dx+c}}}{(hx+g)^4}\,dx$$

Optimal(type 4, 618 leaves, 48 steps):

$$\frac{d^3 F^{e+\frac{bf}{d}-\frac{(-ad+bc)f}{d(dx+c)}}}{3h(-hc+gd)^3}-\frac{F^{e+\frac{f(bx+a)}{dx+c}}}{3h(hx+g)^3}+\frac{5d^2(-ad+bc)fF^{e+\frac{bf}{d}-\frac{(-ad+bc)f}{d(dx+c)}}\ln(F)}{6(-hc+gd)^4}-\frac{(-ad+bc)fF^{e+\frac{f(bx+a)}{dx+c}}\ln(F)}{6(-hc+gd)^2(hx+g)^2}$$
$$-\frac{2d(-ad+bc)fF^{e+\frac{f(bx+a)}{dx+c}}\ln(F)}{3(-hc+gd)^3(hx+g)}+\frac{d^2(-ad+bc)fF^{e+\frac{f(-ah+bg)}{-hc+gd}}\operatorname{Ei}\left(-\frac{(-ad+bc)f(hx+g)\ln(F)}{(-hc+gd)(dx+c)}\right)\ln(F)}{(-hc+gd)^4}$$
$$+\frac{d(-ad+bc)^2f^2F^{e+\frac{bf}{d}-\frac{(-ad+bc)f}{d(dx+c)}}h\ln(F)^2}{6(-hc+gd)^5}-\frac{(-ad+bc)^2f^2F^{e+\frac{f(bx+a)}{dx+c}}h\ln(F)^2}{6(-hc+gd)^4(hx+g)}$$
$$+\frac{d(-ad+bc)^2f^2F^{e+\frac{f(-ah+bg)}{-hc+gd}}h\operatorname{Ei}\left(-\frac{(-ad+bc)f(hx+g)\ln(F)}{(-hc+gd)(dx+c)}\right)\ln(F)^2}{(-hc+gd)^5}$$
$$+\frac{(-ad+bc)^3f^3F^{e+\frac{f(-ah+bg)}{-hc+gd}}h^2\operatorname{Ei}\left(-\frac{(-ad+bc)f(hx+g)\ln(F)}{(-hc+gd)(dx+c)}\right)\ln(F)^3}{6(-hc+gd)^6}$$

Result(type ?, 4470 leaves): Display of huge result suppressed!

Problem 120: Result more than twice size of optimal antiderivative.

$$\int f^{cx^2+bx+a}(ex+d)^3\,dx$$

Optimal(type 4, 226 leaves, 10 steps):

$$-\frac{e^3f^{cx^2+bx+a}}{2c^2\ln(f)^2}+\frac{e(-be+2dc)^2f^{cx^2+bx+a}}{8c^3\ln(f)}+\frac{e(-be+2dc)f^{cx^2+bx+a}(ex+d)}{4c^2\ln(f)}+\frac{ef^{cx^2+bx+a}(ex+d)^2}{2c\ln(f)}$$
$$-\frac{3e^2(-be+2dc)f^{a-\frac{b^2}{4c}}\operatorname{erfi}\left(\frac{(2cx+b)\sqrt{\ln(f)}}{2\sqrt{c}}\right)\sqrt{\pi}}{8c^{5/2}\ln(f)^{3/2}}+\frac{(-be+2dc)^3f^{a-\frac{b^2}{4c}}\operatorname{erfi}\left(\frac{(2cx+b)\sqrt{\ln(f)}}{2\sqrt{c}}\right)\sqrt{\pi}}{16c^{7/2}\sqrt{\ln(f)}}$$

Result(type 4, 552 leaves):

$$-\frac{d^3\sqrt{\pi}f^{\frac{4ac-b^2}{4c}}\operatorname{erf}\left(-\sqrt{-c\ln(f)}\,x+\frac{\ln(f)\,b}{2\sqrt{-c\ln(f)}}\right)}{2\sqrt{-c\ln(f)}}+\frac{e^3x^2f^{cx^2+bx+a}}{2c\ln(f)}-\frac{e^3bxf^{cx^2+bx+a}}{4c^2\ln(f)}+\frac{e^3b^2f^{cx^2+bx+a}}{8c^3\ln(f)}$$

$$+\frac{e^3 b^3 \sqrt{\pi}\, f^{\frac{4ac-b^2}{4c}} \operatorname{erf}\left(-\sqrt{-c\ln(f)}\, x+\frac{\ln(f)\, b}{2\sqrt{-c\ln(f)}}\right)}{16 c^3 \sqrt{-c\ln(f)}}-\frac{3 e^3 b \sqrt{\pi}\, f^{\frac{4ac-b^2}{4c}} \operatorname{erf}\left(-\sqrt{-c\ln(f)}\, x+\frac{\ln(f)\, b}{2\sqrt{-c\ln(f)}}\right)}{8 c^2 \ln(f) \sqrt{-c\ln(f)}}-\frac{e^3 f^{c x^2+b x+a}}{2 c^2 \ln(f)^2}$$

$$+\frac{3 d e^2 x f^{c x^2+b x+a}}{2 c \ln(f)}-\frac{3 d e^2 b f^{c x^2+b x+a}}{4 c^2 \ln(f)}-\frac{3 d e^2 b^2 \sqrt{\pi}\, f^{\frac{4ac-b^2}{4c}} \operatorname{erf}\left(-\sqrt{-c\ln(f)}\, x+\frac{\ln(f)\, b}{2\sqrt{-c\ln(f)}}\right)}{8 c^2 \sqrt{-c\ln(f)}}$$

$$+\frac{3 d e^2 \sqrt{\pi}\, f^{\frac{4ac-b^2}{4c}} \operatorname{erf}\left(-\sqrt{-c\ln(f)}\, x+\frac{\ln(f)\, b}{2\sqrt{-c\ln(f)}}\right)}{4 c \ln(f) \sqrt{-c\ln(f)}}+\frac{3 d^2 e f^{c x^2+b x+a}}{2 c \ln(f)}+\frac{3 d^2 e b \sqrt{\pi}\, f^{\frac{4ac-b^2}{4c}} \operatorname{erf}\left(-\sqrt{-c\ln(f)}\, x+\frac{\ln(f)\, b}{2\sqrt{-c\ln(f)}}\right)}{4 c \sqrt{-c\ln(f)}}$$

Problem 127: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 184 leaves, 9 steps):

$$-\frac{\mathrm{e}^{e x+d}}{a x}-\frac{b\, \mathrm{e}^d \operatorname{Ei}(e x)}{a^2}+\frac{e\, \mathrm{e}^d \operatorname{Ei}(e x)}{a}+\frac{\mathrm{e}^{d-\frac{e\left(b+\sqrt{-4ac+b^2}\right)}{2c}} \operatorname{Ei}\left(\frac{e\left(b+2cx+\sqrt{-4ac+b^2}\right)}{2c}\right)\left(b+\frac{2ac-b^2}{\sqrt{-4ac+b^2}}\right)}{2a^2}$$

$$+\frac{\mathrm{e}^{d-\frac{e\left(b-\sqrt{-4ac+b^2}\right)}{2c}} \operatorname{Ei}\left(\frac{e\left(b+2cx-\sqrt{-4ac+b^2}\right)}{2c}\right)\left(b+\frac{-2ac+b^2}{\sqrt{-4ac+b^2}}\right)}{2a^2}$$

Result(type 4, 560 leaves):

$$e\left(-\frac{\mathrm{e}^{e x+d}}{a x e}-\frac{(a e-b)\, \mathrm{e}^d \operatorname{Ei}_1(-e x)}{a^2 e}-\frac{1}{2 a^2 e \sqrt{-4ace^2+b^2e^2}}\right.\Bigg($$

$$-2\, \mathrm{e}^{\frac{-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}} \operatorname{Ei}_1\left(\frac{-2(ex+d)c-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right) a c e$$

$$+\mathrm{e}^{\frac{-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}} \operatorname{Ei}_1\left(\frac{-2(ex+d)c-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right) b^2 e+2\, \mathrm{e}^{-\frac{be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}} \operatorname{Ei}_1\Bigg($$

$$-\frac{2(ex+d)c+be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\Bigg) a c e-\mathrm{e}^{-\frac{be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}} \operatorname{Ei}_1\left(-\frac{2(ex+d)c+be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right) b^2 e$$

$$+e^{\frac{-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}}\mathrm{Ei}_1\left(\frac{-2(ex+d)c-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right)\sqrt{-4ace^2+b^2e^2}\,b+e^{-\frac{be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}}\mathrm{Ei}_1\left(-\frac{2(ex+d)c+be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right)\sqrt{-4ace^2+b^2e^2}\,b\Big)\Big)$$

Problem 128: Result more than twice size of optimal antiderivative.

$$\int \frac{e^{ex+d}}{x(cx^2+bx+a)}\,dx$$

Optimal(type 4, 142 leaves, 7 steps):

$$\frac{e^d\,\mathrm{Ei}(ex)}{a}-\frac{e^{d-\frac{e\left(b+\sqrt{-4ac+b^2}\right)}{2c}}\mathrm{Ei}\left(\frac{e\left(b+2cx+\sqrt{-4ac+b^2}\right)}{2c}\right)\left(1-\frac{b}{\sqrt{-4ac+b^2}}\right)}{2a}-\frac{e^{d-\frac{e\left(b-\sqrt{-4ac+b^2}\right)}{2c}}\mathrm{Ei}\left(\frac{e\left(b+2cx-\sqrt{-4ac+b^2}\right)}{2c}\right)\left(1+\frac{b}{\sqrt{-4ac+b^2}}\right)}{2a}$$

Result(type 4, 368 leaves):

$$-\frac{e^d\,\mathrm{Ei}_1(-ex)}{a}+\frac{1}{2a\sqrt{-4ace^2+b^2e^2}}\Bigg(e^{\frac{-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}}\mathrm{Ei}_1\left(\frac{-2(ex+d)c-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right)be-e^{-\frac{be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}}\mathrm{Ei}_1\left(-\frac{2(ex+d)c+be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right)be+e^{\frac{-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}}\mathrm{Ei}_1\left(\frac{-2(ex+d)c-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right)\sqrt{-4ace^2+b^2e^2}+e^{-\frac{be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}}\mathrm{Ei}_1\left(-\frac{2(ex+d)c+be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right)\sqrt{-4ace^2+b^2e^2}\Bigg)$$

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

$$\int \frac{e^{ex+d}x^2}{cx^2+bx+a}\,dx$$

Optimal(type 4, 160 leaves, 7 steps):

$$\frac{e^{ex+d}}{ce} - \frac{e^{d - \frac{e\left(b - \sqrt{-4ac+b^2}\right)}{2c}} \operatorname{Ei}\left(\frac{e\left(b+2cx-\sqrt{-4ac+b^2}\right)}{2c}\right)\left(b + \frac{2ac-b^2}{\sqrt{-4ac+b^2}}\right)}{2c^2}$$

$$- \frac{e^{d - \frac{e\left(b + \sqrt{-4ac+b^2}\right)}{2c}} \operatorname{Ei}\left(\frac{e\left(b+2cx+\sqrt{-4ac+b^2}\right)}{2c}\right)\left(b + \frac{-2ac+b^2}{\sqrt{-4ac+b^2}}\right)}{2c^2}$$

```
Result(type 4, 1729 leaves):
```

$$\frac{1}{e^3}\left(\frac{e^2 e^{ex+d}}{c} + \frac{1}{2c^2\sqrt{-4ace^2+b^2e^2}}\left(e^2\left(2\,e^{\frac{-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}} \operatorname{Ei}_1\left(\frac{-2(ex+d)c-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right)ace^2\right.\right.\right.$$

$$-e^{\frac{-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}} \operatorname{Ei}_1\left(\frac{-2(ex+d)c-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right)b^2e^2$$

$$+2\,e^{\frac{-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}} \operatorname{Ei}_1\left(\frac{-2(ex+d)c-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right)bcde$$

$$-2\,e^{\frac{-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}} \operatorname{Ei}_1\left(\frac{-2(ex+d)c-be+2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right)c^2d^2 - 2\,e^{-\frac{be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}} \operatorname{Ei}_1\left(\right.$$

$$\left.-\frac{2(ex+d)c+be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right)ace^2 + e^{-\frac{be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}} \operatorname{Ei}_1\left(-\frac{2(ex+d)c+be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right)b^2e^2$$

$$-2\,e^{-\frac{be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}} \operatorname{Ei}_1\left(-\frac{2(ex+d)c+be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right)bcde + 2\,e^{-\frac{be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}} \operatorname{Ei}_1\left(\right.$$

$$\left.-\frac{2(ex+d)c+be-2dc+\sqrt{-4ace^2+b^2e^2}}{2c}\right)c^2d^2$$

$$+\,\mathrm{e}^{\frac{-b e+2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}}\,\mathrm{Ei}_1\Big(\frac{-2\,(e x+d)\,c-b e+2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}\Big)\sqrt{-4 a c e^2+b^2 e^2}\;b e$$

$$-\,2\,\mathrm{e}^{\frac{-b e+2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}}\,\mathrm{Ei}_1\Big(\frac{-2\,(e x+d)\,c-b e+2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}\Big)\sqrt{-4 a c e^2+b^2 e^2}\;c d+\mathrm{e}^{-\frac{b e-2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}}\,\mathrm{Ei}_1\Big($$

$$-\frac{2\,(e x+d)\,c+b e-2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}\Big)\sqrt{-4 a c e^2+b^2 e^2}\;b e-2\,\mathrm{e}^{-\frac{b e-2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}}\,\mathrm{Ei}_1\Big($$

$$-\frac{2\,(e x+d)\,c+b e-2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}\Big)\sqrt{-4 a c e^2+b^2 e^2}\;c d\Big)\Big)$$

$$-\,\frac{1}{\sqrt{-4 a c e^2+b^2 e^2}}\Big(d^2 e^2\Big(\mathrm{e}^{\frac{-b e+2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}}\,\mathrm{Ei}_1\Big(\frac{-2\,(e x+d)\,c-b e+2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}\Big)-\mathrm{e}^{-\frac{b e-2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}}\,\mathrm{Ei}_1\Big($$

$$-\frac{2\,(e x+d)\,c+b e-2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}\Big)\Big)\Big)+\frac{1}{c\sqrt{-4 a c e^2+b^2 e^2}}\Big(d e^2\Big($$

$$-\mathrm{e}^{\frac{-b e+2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}}\,\mathrm{Ei}_1\Big(\frac{-2\,(e x+d)\,c-b e+2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}\Big)\,b e$$

$$+\,2\,\mathrm{e}^{\frac{-b e+2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}}\,\mathrm{Ei}_1\Big(\frac{-2\,(e x+d)\,c-b e+2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}\Big)\,c d+\mathrm{e}^{-\frac{b e-2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}}\,\mathrm{Ei}_1\Big($$

$$-\frac{2\,(e x+d)\,c+b e-2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}\Big)\,b e-2\,\mathrm{e}^{-\frac{b e-2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}}\,\mathrm{Ei}_1\Big(-\frac{2\,(e x+d)\,c+b e-2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}\Big)\,c d$$

$$+\,\mathrm{e}^{\frac{-b e+2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}}\,\mathrm{Ei}_1\Big(\frac{-2\,(e x+d)\,c-b e+2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}\Big)\sqrt{-4 a c e^2+b^2 e^2}+\mathrm{e}^{-\frac{b e-2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}}\,\mathrm{Ei}_1\Big($$

$$-\frac{2\,(e x+d)\,c+b e-2 d c+\sqrt{-4 a c e^2+b^2 e^2}}{2 c}\Big)\sqrt{-4 a c e^2+b^2 e^2}\Big)\Big)\Big)$$

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

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

Optimal(type 4, 203 leaves, 9 steps):

$$-\frac{e^{e x+d}}{c e^2}-\frac{b e^{e x+d}}{c^2 e}+\frac{e^{e x+d} x}{c e}+\frac{e^{d-\frac{e\left(b-\sqrt{-4 a c+b^2}\right)}{2 c}} \operatorname{Ei}\left(\frac{e\left(b+2 c x-\sqrt{-4 a c+b^2}\right)}{2 c}\right)\left(b^2-a c-\frac{b\left(-3 a c+b^2\right)}{\sqrt{-4 a c+b^2}}\right)}{2 c^3}$$
$$+\frac{e^{d-\frac{e\left(b+\sqrt{-4 a c+b^2}\right)}{2 c}} \operatorname{Ei}\left(\frac{e\left(b+2 c x+\sqrt{-4 a c+b^2}\right)}{2 c}\right)\left(b^2-a c+\frac{b\left(-3 a c+b^2\right)}{\sqrt{-4 a c+b^2}}\right)}{2 c^3}$$

Result(type ?, 3531 leaves): Display of huge result suppressed!

Problem 133: Result more than twice size of optimal antiderivative.

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

Optimal(type 3, 22 leaves, 2 steps):

$$\frac{\operatorname{arctanh}\left(\frac{2^x \sqrt{b}}{\sqrt{a}}\right)}{\ln(2) \sqrt{a} \sqrt{b}}$$

Result(type 3, 48 leaves):

$$\frac{\ln\left(2^x+\frac{a}{\sqrt{a b}}\right)}{2 \sqrt{a b} \ln(2)}-\frac{\ln\left(2^x-\frac{a}{\sqrt{a b}}\right)}{2 \sqrt{a b} \ln(2)}$$

Problem 134: Unable to integrate problem.

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

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

$$\frac{\arctan\left(\frac{2^x \sqrt{b}}{\sqrt{a-4^x b}}\right)}{\ln(2) \sqrt{b}}$$

Result(type 8, 16 leaves):

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

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

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

Optimal(type 3, 97 leaves, 7 steps):

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

Result(type 3, 992 leaves):

$$\frac{4 \ln(f)^2 a c d h^2 x}{4 \ln(f)^2 a^2 c h^2 - \ln(f)^2 a b^2 h^2} - \frac{\ln(f)^2 b^2 d h^2 x}{4 \ln(f)^2 a^2 c h^2 - \ln(f)^2 a b^2 h^2} + \frac{4 \ln(f)^2 a c d g h}{4 \ln(f)^2 a^2 c h^2 - \ln(f)^2 a b^2 h^2} - \frac{\ln(f)^2 b^2 d g h}{4 \ln(f)^2 a^2 c h^2 - \ln(f)^2 a b^2 h^2}$$

$$- \frac{2 \ln\left(f^{h x + g} + \frac{2 a b e - b^2 d + \sqrt{-16 a^3 c e^2 + 4 a^2 b^2 e^2 + 16 a^2 b c d e - 4 a b^3 d e - 4 a b^2 c d^2 + b^4 d^2}}{2 c (2 a e - d b)}\right) c d}{(4 a c - b^2) h \ln(f)}$$

$$+ \frac{\ln\left(f^{h x + g} + \frac{2 a b e - b^2 d + \sqrt{-16 a^3 c e^2 + 4 a^2 b^2 e^2 + 16 a^2 b c d e - 4 a b^3 d e - 4 a b^2 c d^2 + b^4 d^2}}{2 c (2 a e - d b)}\right) b^2 d}{2 a (4 a c - b^2) h \ln(f)} + \frac{1}{2 a (4 a c - b^2) h \ln(f)} \left(\ln\left(f^{h x + g}\right.\right.$$

$$\left.\left. + \frac{2 a b e - b^2 d + \sqrt{-16 a^3 c e^2 + 4 a^2 b^2 e^2 + 16 a^2 b c d e - 4 a b^3 d e - 4 a b^2 c d^2 + b^4 d^2}}{2 c (2 a e - d b)}\right)\right.$$

$$\left.\sqrt{-16 a^3 c e^2 + 4 a^2 b^2 e^2 + 16 a^2 b c d e - 4 a b^3 d e - 4 a b^2 c d^2 + b^4 d^2}\right)$$

$$- \frac{2 \ln\left(f^{h x + g} - \frac{-2 a b e + b^2 d + \sqrt{-16 a^3 c e^2 + 4 a^2 b^2 e^2 + 16 a^2 b c d e - 4 a b^3 d e - 4 a b^2 c d^2 + b^4 d^2}}{2 c (2 a e - d b)}\right) c d}{(4 a c - b^2) h \ln(f)}$$

$$+ \frac{\ln\left(f^{h x + g} - \frac{-2 a b e + b^2 d + \sqrt{-16 a^3 c e^2 + 4 a^2 b^2 e^2 + 16 a^2 b c d e - 4 a b^3 d e - 4 a b^2 c d^2 + b^4 d^2}}{2 c (2 a e - d b)}\right) b^2 d}{2 a (4 a c - b^2) h \ln(f)}$$

$$- \frac{1}{2 a (4 a c - b^2) h \ln(f)} \left(\ln\left(f^{h x + g}\right.\right.$$

$$\left.\left. - \frac{-2 a b e + b^2 d + \sqrt{-16 a^3 c e^2 + 4 a^2 b^2 e^2 + 16 a^2 b c d e - 4 a b^3 d e - 4 a b^2 c d^2 + b^4 d^2}}{2 c (2 a e - d b)}\right)\right.$$

$$\sqrt{-16 a^3 c e^2 + 4 a^2 b^2 e^2 + 16 a^2 b c d e - 4 a b^3 d e - 4 a b^2 c d^2 + b^4 d^2}\,\Big)$$

```
Problem 144: Result more than twice size of optimal antiderivative.
```

$$\int \frac{1}{a + b f^{-d x - c} + c f^{d x + c}}\, dx$$

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

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

```
Result(type 3, 134 leaves):
```

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

```
Problem 145: Result more than twice size of optimal antiderivative.
```

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

```
Optimal(type 4, 187 leaves, 8 steps):
```

$$\frac{x \ln\left(1 + \frac{2 c f^{d x + c}}{a - \sqrt{a^2 - 4 b c}}\right)}{d \ln(f) \sqrt{a^2 - 4 b c}} - \frac{x \ln\left(1 + \frac{2 c f^{d x + c}}{a + \sqrt{a^2 - 4 b c}}\right)}{d \ln(f) \sqrt{a^2 - 4 b c}} + \frac{\operatorname{polylog}\left(2, -\frac{2 c f^{d x + c}}{a - \sqrt{a^2 - 4 b c}}\right)}{d^2 \ln(f)^2 \sqrt{a^2 - 4 b c}} - \frac{\operatorname{polylog}\left(2, -\frac{2 c f^{d x + c}}{a + \sqrt{a^2 - 4 b c}}\right)}{d^2 \ln(f)^2 \sqrt{a^2 - 4 b c}}$$

```
Result(type 4, 425 leaves):
```

$$-\frac{\ln\left(\frac{-2 b f^{-d x - c} + \sqrt{a^2 - 4 b c} - a}{-a + \sqrt{a^2 - 4 b c}}\right) x}{\ln(f)\, d \sqrt{a^2 - 4 b c}} + \frac{\ln\left(\frac{2 b f^{-d x - c} + \sqrt{a^2 - 4 b c} + a}{a + \sqrt{a^2 - 4 b c}}\right) x}{\ln(f)\, d \sqrt{a^2 - 4 b c}} - \frac{\ln\left(\frac{-2 b f^{-d x - c} + \sqrt{a^2 - 4 b c} - a}{-a + \sqrt{a^2 - 4 b c}}\right) c}{\ln(f)\, d^2 \sqrt{a^2 - 4 b c}}$$
$$+ \frac{\ln\left(\frac{2 b f^{-d x - c} + \sqrt{a^2 - 4 b c} + a}{a + \sqrt{a^2 - 4 b c}}\right) c}{\ln(f)\, d^2 \sqrt{a^2 - 4 b c}} + \frac{\operatorname{dilog}\left(\frac{-2 b f^{-d x - c} + \sqrt{a^2 - 4 b c} - a}{-a + \sqrt{a^2 - 4 b c}}\right)}{\ln(f)^2 d^2 \sqrt{a^2 - 4 b c}} - \frac{\operatorname{dilog}\left(\frac{2 b f^{-d x - c} + \sqrt{a^2 - 4 b c} + a}{a + \sqrt{a^2 - 4 b c}}\right)}{\ln(f)^2 d^2 \sqrt{a^2 - 4 b c}}$$

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

```
Problem 147: Unable to integrate problem.
```

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

```
Optimal(type 4, 60 leaves, 4 steps):
```

$$\frac{b\, \mathrm{Ei}\left(\frac{c \ln(F) \sqrt{e x+d}}{\sqrt{-e f x+d f}}\right)}{d e}+\frac{a \ln\left(\frac{\sqrt{e x+d}}{\sqrt{-e f x+d f}}\right)}{d e}$$

```
Result(type 8, 43 leaves):
```

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

```
Problem 149: Unable to integrate problem.
```

$$\int \frac{\left(F^{\frac{\sqrt{-a x+1}}{\sqrt{a x+1}}}\right)^n}{-a^2 x^2+1}\, dx$$

```
Optimal(type 4, 66 leaves, 3 steps):
```

$$-\frac{\left(F^{\frac{\sqrt{-a x+1}}{\sqrt{a x+1}}}\right)^n \mathrm{Ei}\left(\frac{n \ln(F) \sqrt{-a x+1}}{\sqrt{a x+1}}\right)}{a F^{\frac{n\sqrt{-a x+1}}{\sqrt{a x+1}}}}$$

```
Result(type 8, 35 leaves):
```

$$\int \frac{\left(F^{\frac{\sqrt{-a x+1}}{\sqrt{a x+1}}}\right)^n}{-a^2 x^2+1}\, dx$$

Problem 150: Unable to integrate problem.

$$\int \frac{F^{\frac{3\sqrt{-ax+1}}{\sqrt{ax+1}}}}{-a^2x^2+1}\,dx$$

Optimal(type 4, 25 leaves, 2 steps):

$$-\frac{\operatorname{Ei}\left(\frac{3\ln(F)\sqrt{-ax+1}}{\sqrt{ax+1}}\right)}{a}$$

Result(type 8, 34 leaves):

$$\int \frac{F^{\frac{3\sqrt{-ax+1}}{\sqrt{ax+1}}}}{-a^2x^2+1}\,dx$$

Problem 151: Unable to integrate problem.

$$\int \frac{F^{\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}}{-a^2x^2+1}\,dx$$

Optimal(type 4, 24 leaves, 2 steps):

$$-\frac{\operatorname{Ei}\left(\frac{\ln(F)\sqrt{-ax+1}}{\sqrt{ax+1}}\right)}{a}$$

Result(type 8, 33 leaves):

$$\int \frac{F^{\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}}{-a^2x^2+1}\,dx$$

Problem 152: Unable to integrate problem.

$$\int \frac{1}{F^{\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}\left(-a^2x^2+1\right)}\,dx$$

Optimal(type 4, 25 leaves, 2 steps):

$$-\frac{\mathrm{Ei}\left(-\frac{\ln(F)\sqrt{-a x+1}}{\sqrt{a x+1}}\right)}{a}$$

Result(type 8, 35 leaves):

$$\int \frac{1}{F^{\frac{\sqrt{-a x+1}}{\sqrt{a x+1}}}\left(-a^{2} x^{2}+1\right)} \, dx$$

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

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

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

$$-\frac{a^{x} b^{x}}{x}+\mathrm{Ei}(x(\ln(a)+\ln(b)))(\ln(a)+\ln(b))$$

Result(type 4, 159 leaves):

$$-\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)\left(\frac{1}{x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)}+1-\ln(x)-\mathrm{I}\pi-\ln(\ln(b))-\ln\left(1+\frac{\ln(a)}{\ln(b)}\right)-\frac{2x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)+2}{2x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)}+\frac{e^{x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)}}{x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)}\right.$$
$$\left.+\ln\left(-x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)\right)+\mathrm{Ei}_{1}\left(-x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)\right)\right)$$

Problem 154: Unable to integrate problem.

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

Optimal(type 4, 692 leaves, 13 steps):

$$\frac{(g x+f)^{4}\left(e+\frac{-b e+2 d c}{\sqrt{-4 a c+b^{2}}}\right)}{4 g\left(b-\sqrt{-4 a c+b^{2}}\right)}-\frac{(g x+f)^{3}\ln\left(1+\frac{2 c\,e^{i x+h}}{b-\sqrt{-4 a c+b^{2}}}\right)\left(e+\frac{-b e+2 d c}{\sqrt{-4 a c+b^{2}}}\right)}{i\left(b-\sqrt{-4 a c+b^{2}}\right)}$$
$$-\frac{3 g(g x+f)^{2}\,\mathrm{polylog}\left(2,-\frac{2 c\,e^{i x+h}}{b-\sqrt{-4 a c+b^{2}}}\right)\left(e+\frac{-b e+2 d c}{\sqrt{-4 a c+b^{2}}}\right)}{i^{2}\left(b-\sqrt{-4 a c+b^{2}}\right)}+\frac{6 g^{2}(g x+f)\,\mathrm{polylog}\left(3,-\frac{2 c\,e^{i x+h}}{b-\sqrt{-4 a c+b^{2}}}\right)\left(e+\frac{-b e+2 d c}{\sqrt{-4 a c+b^{2}}}\right)}{i^{3}\left(b-\sqrt{-4 a c+b^{2}}\right)}$$

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

$$- \frac{(g x+f)^3 \ln\left(1+\frac{2 c e^{i x+h}}{b+\sqrt{-4 a c+b^2}}\right)\left(e+\frac{b e-2 d c}{\sqrt{-4 a c+b^2}}\right)}{i\left(b+\sqrt{-4 a c+b^2}\right)} - \frac{3 g (g x+f)^2 \operatorname{polylog}\left(2, -\frac{2 c e^{i x+h}}{b+\sqrt{-4 a c+b^2}}\right)\left(e+\frac{b e-2 d c}{\sqrt{-4 a c+b^2}}\right)}{i^2\left(b+\sqrt{-4 a c+b^2}\right)}$$

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

Result(type 8, 43 leaves):

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

Problem 155: Unable to integrate problem.

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

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

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

Result(type 8, 20 leaves):

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

Problem 156: Unable to integrate problem.

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

Optimal(type 4, 99 leaves, 3 steps):

$$\frac{F^{a f} (e x+d) \operatorname{erfi}\left(\frac{1+2 b f n \ln(F) \ln\left(c (e x+d)^n\right)}{2 n \sqrt{b} \sqrt{f} \sqrt{\ln(F)}}\right)\sqrt{\pi}}{2 e e^{\frac{1}{4 b f n^2 \ln(F)}} n \left(c (e x+d)^n\right)^{\frac{1}{n}} \sqrt{b} \sqrt{f} \sqrt{\ln(F)}}$$

Result(type 8, 22 leaves):

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

Problem 157: Unable to integrate problem.

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

Optimal(type 4, 102 leaves, 3 steps):

$$-\frac{F^{a f}\left(c\,(e x+d)^{n}\right)^{\frac{2}{n}}\operatorname{erfi}\left(\frac{1-b f n\ln(F)\ln\left(c\,(e x+d)^{n}\right)}{n\sqrt{b}\,\sqrt{f}\,\sqrt{\ln(F)}}\right)\sqrt{\pi}}{2\,e\,\mathrm{e}^{\frac{1}{b f n^{2}\ln(F)}}\,g^{3}\,n\,(e x+d)^{2}\sqrt{b}\,\sqrt{f}\,\sqrt{\ln(F)}}$$

Result(type 8, 33 leaves):

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

Problem 158: Unable to integrate problem.

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

Optimal(type 4, 99 leaves, 3 steps):

$$\frac{F^{a f}\,(e x+d)\operatorname{erfi}\left(\frac{1+2\,b f n\ln(F)\ln\left(c\,(e x+d)^{n}\right)}{2\,n\sqrt{b}\,\sqrt{f}\,\sqrt{\ln(F)}}\right)\sqrt{\pi}}{2\,e\,\mathrm{e}^{\frac{1}{4\,b f n^{2}\ln(F)}}\,n\left(c\,(e x+d)^{n}\right)^{\frac{1}{n}}\sqrt{b}\,\sqrt{f}\,\sqrt{\ln(F)}}$$

Result(type 8, 22 leaves):

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

Problem 160: Unable to integrate problem.

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

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

$$\frac{g\,(e x+d)^2\,\mathrm{erfi}\left(\frac{\frac{1}{n}+a b f \ln(F)+b^2 f \ln(F)\ln\left(c\,(e x+d)^n\right)}{b\sqrt{f}\sqrt{\ln(F)}}\right)\sqrt{\pi}}{2\,b\,e\,\mathrm{e}^{\frac{1+2\,a\,b\,f\,n\,\ln(F)}{b^2 f n^2 \ln(F)}}\,n\left(c\,(e x+d)^n\right)^{\frac{2}{n}}\sqrt{f}\sqrt{\ln(F)}}$$

Result(type 8, 31 leaves):

$$\int F^{f\left(a+b\ln\left(c\,(e x+d)^n\right)\right)^2}\,(e g x+g d)\,\mathrm{d}x$$

Problem 161: Unable to integrate problem.

$$\int F^{f\left(a+b\ln\left(c\,(e x+d)^n\right)\right)^2}\,\mathrm{d}x$$

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

$$\frac{(e x+d)\,\mathrm{erfi}\left(\frac{\frac{1}{n}+2\,a b f \ln(F)+2\,b^2 f \ln(F)\ln\left(c\,(e x+d)^n\right)}{2\,b\sqrt{f}\sqrt{\ln(F)}}\right)\sqrt{\pi}}{2\,b\,e\,\mathrm{e}^{\frac{1+4\,a\,b\,f\,n\,\ln(F)}{4\,b^2 f n^2 \ln(F)}}\,n\left(c\,(e x+d)^n\right)^{\frac{1}{n}}\sqrt{f}\sqrt{\ln(F)}}$$

Result(type 8, 22 leaves):

$$\int F^{f\left(a+b\ln\left(c\,(e x+d)^n\right)\right)^2}\,\mathrm{d}x$$

Problem 162: Unable to integrate problem.

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

Optimal(type 4, 114 leaves, 4 steps):

$$-\frac{\left(c\,(e x+d)^n\right)^{\frac{2}{n}}\,\mathrm{erfi}\left(\frac{\frac{1}{n}-a b f \ln(F)-b^2 f \ln(F)\ln\left(c\,(e x+d)^n\right)}{b\sqrt{f}\sqrt{\ln(F)}}\right)\sqrt{\pi}}{2\,b\,e\,\mathrm{e}^{\frac{1-2\,a\,b\,f\,n\,\ln(F)}{b^2 f n^2 \ln(F)}}\,g^3 n\,(e x+d)^2\sqrt{f}\sqrt{\ln(F)}}$$

Result(type 8, 33 leaves):

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

Problem 211: Unable to integrate problem.

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

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

$$-\frac{f^a g^c x \Gamma\left(\frac{1}{n}, -x^n (b \ln(f) + d \ln(g))\right)}{n \left(-x^n (b \ln(f) + d \ln(g))\right)^{\frac{1}{n}}}$$

Result(type 8, 21 leaves):

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

Problem 212: Unable to integrate problem.

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

Optimal(type 4, 57 leaves, 1 step):

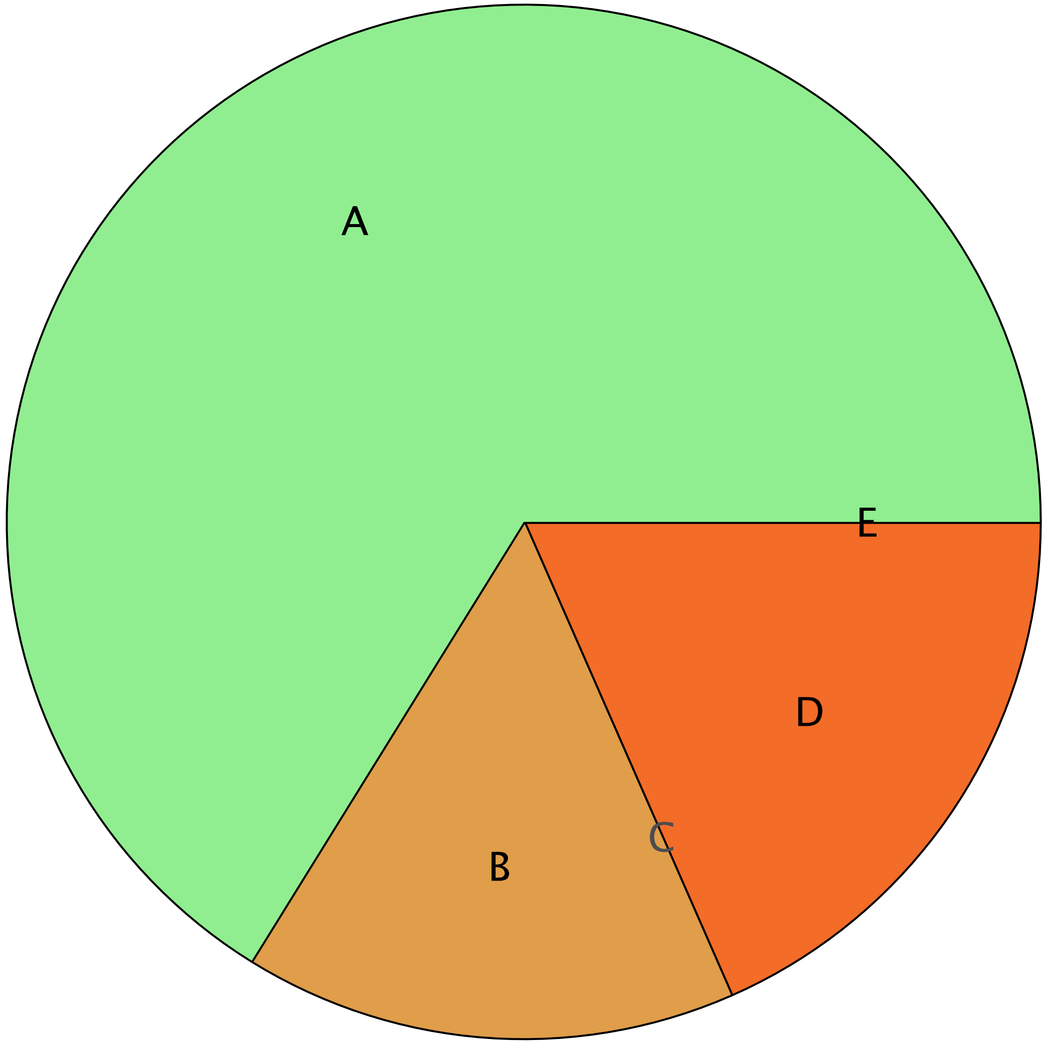
$$-\frac{(b x+a)^{1+m} \Gamma\left(\frac{1+m}{n}, -(b x+a)^n \ln(f)\right)}{b n \left(-(b x+a)^n \ln(f)\right)^{\frac{1+m}{n}}}$$

Result(type 8, 19 leaves):

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

Summary of Integration Test Results

266 integration problems



A - 176 optimal antiderivatives
B - 41 more than twice size of optimal antiderivatives
C - 0 unnecessarily complex antiderivatives
D - 49 unable to integrate problems
E - 0 integration timeouts