Mathematica 11.3 Integration Test Results

on the problems in the test-suite directory "2 Exponentials"

Test results for the 98 problems in "2.1 u (F^(c (a+b x)))^n.m"

Test results for the 93 problems in "2.2 (c+d x)^m (F^(g (e+f x)))^n (a+b (F^(g (e+f x)))^n)^p.m"

Problem 46: Unable to integrate problem.

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

Optimal (type 4, 192 leaves, 6 steps):

$$\frac{(c+d x)^4}{4 a d}-\frac{(c+d x)^3 \operatorname{Log}\left[1+\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{a f g n \operatorname{Log}[F]}-\frac{3 d (c+d x)^2 \operatorname{PolyLog}\left[2,-\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{a f^2 g^2 n^2 \operatorname{Log}[F]^2}+$$
$$\frac{6 d^2 (c+d x) \operatorname{PolyLog}\left[3,-\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{a f^3 g^3 n^3 \operatorname{Log}[F]^3}-\frac{6 d^3 \operatorname{PolyLog}\left[4,-\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{a f^4 g^4 n^4 \operatorname{Log}[F]^4}$$

Result (type 8, 27 leaves):

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

Problem 47: Unable to integrate problem.

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

Optimal (type 4, 145 leaves, 5 steps):

$$\frac{(c+d\,x)^3}{3\,a\,d}-\frac{(c+d\,x)^2\,\mathrm{Log}\left[1+\frac{b\,\left(F^{g\,(e+f\,x)}\right)^n}{a}\right]}{a\,f\,g\,n\,\mathrm{Log}[F]}-\frac{2\,d\,(c+d\,x)\,\mathrm{PolyLog}\left[2,-\frac{b\,\left(F^{g\,(e+f\,x)}\right)^n}{a}\right]}{a\,f^2\,g^2\,n^2\,\mathrm{Log}[F]^2}+\frac{2\,d^2\,\mathrm{PolyLog}\left[3,-\frac{b\,\left(F^{g\,(e+f\,x)}\right)^n}{a}\right]}{a\,f^3\,g^3\,n^3\,\mathrm{Log}[F]^3}$$

Result (type 8, 27 leaves) :

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

Problem 48: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 98 leaves, 4 steps) :

$$\frac{(c+d\,x)^2}{2\,a\,d}-\frac{(c+d\,x)\,\mathrm{Log}\left[1+\frac{b\,\left(F^{g\,(e+f\,x)}\right)^n}{a}\right]}{a\,f\,g\,n\,\mathrm{Log}[F]}-\frac{d\,\mathrm{PolyLog}\left[2,-\frac{b\,\left(F^{g\,(e+f\,x)}\right)^n}{a}\right]}{a\,f^2\,g^2\,n^2\,\mathrm{Log}[F]^2}$$

Result (type 1, 1 leaves) :

???

Problem 49: Result more than twice size of optimal antiderivative.

$$\int\frac{1}{a+b\,\left(F^{g\,(e+f\,x)}\right)^n}\,dx$$

Optimal (type 3, 40 leaves, 5 steps) :

$$\frac{x}{a}-\frac{\mathrm{Log}\left[a+b\,\left(F^{g\,(e+f\,x)}\right)^n\right]}{a\,f\,g\,n\,\mathrm{Log}[F]}$$

Result (type 3, 100 leaves) :

$$\frac{x}{a}-\frac{\mathrm{Log}\left[a+b\,e^{n\,\left(-f\,g\,x\,\mathrm{Log}[F]+\mathrm{Log}\left[F^{e\,g+f\,g\,x}\right]\right)}\,\left(F^{e\,g+f\,g\,x}\right)^{n-\frac{n\,\left(-f\,g\,x\,\mathrm{Log}[F]+\mathrm{Log}\left[F^{e\,g+f\,g\,x}\right]\right)}{\mathrm{Log}\left[F^{e\,g+f\,g\,x}\right]}}\right]}{a\,f\,g\,n\,\mathrm{Log}[F]}$$

Problem 52: Unable to integrate problem.

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

Optimal (type 4, 388 leaves, 13 steps):

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

Result (type 8, 27 leaves):

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

Problem 53: Unable to integrate problem.

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

Optimal (type 4, 294 leaves, 11 steps):

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

Result (type 8, 27 leaves):

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

Problem 54: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 191 leaves, 11 steps):

$$\frac{(c+d x)^2}{2 a^2 d}-\frac{d x}{a^2 f g n \operatorname{Log}[F]}+\frac{c+d x}{a f \left(a+b \left(F^{g (e+f x)}\right)^n\right) g n \operatorname{Log}[F]}+\frac{d \operatorname{Log}\left[a+b \left(F^{g (e+f x)}\right)^n\right]}{a^2 f^2 g^2 n^2 \operatorname{Log}[F]^2}-\frac{(c+d x) \operatorname{Log}\left[1+\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{a^2 f g n \operatorname{Log}[F]}-\frac{d \operatorname{PolyLog}\left[2,-\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{a^2 f^2 g^2 n^2 \operatorname{Log}[F]^2}$$

Result (type 1, 1 leaves):

???

Problem 58: Unable to integrate problem.

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

Optimal (type 4, 594 leaves, 26 steps):

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

$$\frac{(c+d x)^3}{a^2 f \left(a+b \left(F^{g (e+f x)}\right)^n\right) g n \operatorname{Log}[F]}-\frac{3 d^2 (c+d x) \operatorname{Log}\left[1+\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{a^3 f^3 g^3 n^3 \operatorname{Log}[F]^3}+\frac{9 d (c+d x)^2 \operatorname{Log}\left[1+\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{2 a^3 f^2 g^2 n^2 \operatorname{Log}[F]^2}-\frac{(c+d x)^3 \operatorname{Log}\left[1+\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{a^3 f g n \operatorname{Log}[F]}-$$

$$\frac{3 d^3 \operatorname{PolyLog}\left[2,-\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{a^3 f^4 g^4 n^4 \operatorname{Log}[F]^4}+\frac{9 d^2 (c+d x) \operatorname{PolyLog}\left[2,-\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{a^3 f^3 g^3 n^3 \operatorname{Log}[F]^3}-\frac{3 d (c+d x)^2 \operatorname{PolyLog}\left[2,-\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{a^3 f^2 g^2 n^2 \operatorname{Log}[F]^2}-$$

$$\frac{9 d^3 \operatorname{PolyLog}\left[3,-\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{a^3 f^4 g^4 n^4 \operatorname{Log}[F]^4}+\frac{6 d^2 (c+d x) \operatorname{PolyLog}\left[3,-\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{a^3 f^3 g^3 n^3 \operatorname{Log}[F]^3}-\frac{6 d^3 \operatorname{PolyLog}\left[4,-\frac{b \left(F^{g (e+f x)}\right)^n}{a}\right]}{a^3 f^4 g^4 n^4 \operatorname{Log}[F]^4}$$

Result (type 8, 27 leaves):

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

Problem 59: Unable to integrate problem.

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

Optimal (type 4, 439 leaves, 24 steps):

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

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

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

Result (type 8, 27 leaves):

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

Problem 60: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 276 leaves, 17 steps):

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

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

Result (type 1, 1 leaves):

???

Problem 70: Unable to integrate problem.

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

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

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

$$3\times 2^{-1-m} a b^2 F^{2 \left(e-\frac{c f}{d}\right) g n-2 g n (e+f x)} \left(F^{e g+f g x}\right)^{2 n} (c+d x)^m \text{Gamma}\left[1+m,-\frac{2 f g n (c+d x) \text{Log}[F]}{d}\right] \left(-\frac{f g n (c+d x) \text{Log}[F]}{d}\right)^{-m}+$$

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

Result (type 8, 27 leaves):

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

Problem 71: Unable to integrate problem.

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

Optimal (type 4, 228 leaves, 6 steps):

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

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

Result (type 8, 27 leaves):

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

Problem 72: Unable to integrate problem.

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

Optimal (type 4, 116 leaves, 4 steps):

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

Result (type 8, 25 leaves):

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

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

Problem 16: Unable to integrate problem.

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

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

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

Result (type 8, 31 leaves):

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

Problem 17: Unable to integrate problem.

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

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

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

Result (type 8, 46 leaves):

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

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

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

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

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

Result (type 3, 23 leaves):

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

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

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

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

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

Result (type 4, 71 leaves):

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

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

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

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

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

Result (type 4, 83 leaves):

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

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

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

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

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

Result (type 4, 119 leaves):

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

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

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

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

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

Result (type 4, 107 leaves):

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

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

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

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

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

Result (type 4, 101 leaves):

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

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

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

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

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

Result (type 4, 113 leaves):

$$\frac{1}{10\,395\, x^{11}} f^a \left(32\, b^{11/2} \sqrt{\pi}\, x^{11}\, \text{Erfi}\left[\sqrt{b}\, x \sqrt{\text{Log}[f]}\right] \text{Log}[f]^{11/2} - f^{b x^2} \left(945 + 210\, b\, x^2\, \text{Log}[f] + 60\, b^2 x^4\, \text{Log}[f]^2 + 24\, b^3 x^6\, \text{Log}[f]^3 + 16\, b^4 x^8\, \text{Log}[f]^4 + 32\, b^5 x^{10}\, \text{Log}[f]^5\right)\right)$$

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

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

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

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

Result (type 4, 71 leaves):

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

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

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

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

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

Result (type 4, 83 leaves):

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

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

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

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

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

Result (type 4, 77 leaves):

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

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

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

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

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

Result (type 4, 65 leaves):

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

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

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

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

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

Result (type 4, 81 leaves):

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

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

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

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

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

Result (type 4, 69 leaves):

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

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

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

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

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

Result (type 4, 110 leaves):

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

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

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

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

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

Result (type 4, 98 leaves):

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

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

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

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

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

Result (type 4, 112 leaves) :

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

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

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

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

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

Result (type 4, 124 leaves) :

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

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

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

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

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

Result (type 4, 81 leaves) :

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

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

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

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

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

Result (type 4, 69 leaves):

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

Problem 202: Unable to integrate problem.

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

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

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

Result (type 8, 17 leaves):

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

Problem 203: Unable to integrate problem.

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

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

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

Result (type 8, 15 leaves):

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

Problem 208: Unable to integrate problem.

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

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

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

Result (type 8, 35 leaves):

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

Problem 209: Unable to integrate problem.

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

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

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

Result (type 8, 35 leaves):

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

Problem 210: Unable to integrate problem.

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

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

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

Result (type 8, 35 leaves):

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

Problem 211: Unable to integrate problem.

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

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

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

Result (type 8, 33 leaves):

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

Problem 247: Unable to integrate problem.

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

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

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

Result (type 8, 17 leaves):

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

Problem 248: Unable to integrate problem.

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

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

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

Result (type 8, 17 leaves):

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

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

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

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

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

Result (type 4, 95 leaves):

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

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

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

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

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

Result (type 4, 111 leaves):

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

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

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

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

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

Result (type 4, 155 leaves):

$$\frac{1}{128 b^{13/2} d \text{Log}[F]^{13/2}} F^a \left(10395 \sqrt{\pi} \text{Erfi}\left[\sqrt{b} (c+d x) \sqrt{\text{Log}[F]}\right] - 2 \sqrt{b} F^{b (c+d x)^2} \sqrt{\text{Log}[F]} \left(10395 (c+d x) - 6930 b (c+d x)^3 \text{Log}[F] + 2772 b^2 (c+d x)^5 \text{Log}[F]^2 - 792 b^3 (c+d x)^7 \text{Log}[F]^3 + 176 b^4 (c+d x)^9 \text{Log}[F]^4 - 32 b^5 (c+d x)^{11} \text{Log}[F]^5\right)\right)$$

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

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

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

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

Result (type 4, 139 leaves):

$$\frac{1}{64 b^{11/2} d \text{Log}[F]^{11/2}} F^a \left(-945 \sqrt{\pi} \text{Erfi}\left[\sqrt{b} (c+d x) \sqrt{\text{Log}[F]}\right] + 2 \sqrt{b} F^{b (c+d x)^2} \sqrt{\text{Log}[F]} \left(945 (c+d x) - 630 b (c+d x)^3 \text{Log}[F] + 252 b^2 (c+d x)^5 \text{Log}[F]^2 - 72 b^3 (c+d x)^7 \text{Log}[F]^3 + 16 b^4 (c+d x)^9 \text{Log}[F]^4\right)\right)$$

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

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

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

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

Result (type 4, 129 leaves):

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

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

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

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

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

Result (type 4, 152 leaves):

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

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

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

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

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

Result (type 4, 95 leaves):

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

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

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

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

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

Result (type 4, 111 leaves):

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

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

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

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

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

Result (type 4, 108 leaves):

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

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

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

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

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

Result (type 4, 92 leaves):

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

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

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

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

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

Result (type 4, 112 leaves):

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

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

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

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

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

Result (type 4, 96 leaves):

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

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

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

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

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

Result (type 4, 145 leaves):

$$\frac{1}{10\,395\,d}F^a\left(-32\,b^{11/2}\,\sqrt{\pi}\,\text{Erfi}\left[\frac{\sqrt{b}\,\sqrt{\text{Log}[F]}}{c+d\,x}\right]\text{Log}[F]^{11/2}+F^{\frac{b}{(c+d\,x)^2}}\,(c+d\,x)\right.$$
$$\left.\left(945\,(c+d\,x)^{10}+210\,b\,(c+d\,x)^8\,\text{Log}[F]+60\,b^2\,(c+d\,x)^6\,\text{Log}[F]^2+24\,b^3\,(c+d\,x)^4\,\text{Log}[F]^3+16\,b^4\,(c+d\,x)^2\,\text{Log}[F]^4+32\,b^5\,\text{Log}[F]^5\right)\right)$$

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

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

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

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

Result (type 4, 129 leaves):

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

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

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

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

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

Result (type 4, 143 leaves):

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

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

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

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

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

Result (type 4, 159 leaves):

$$\frac{1}{128\, b^{13/2}\, d\, \text{Log}[F]^{13/2}} F^a \left(-10\,395\sqrt{\pi}\, \text{Erfi}\left[\frac{\sqrt{b}\,\sqrt{\text{Log}[F]}}{c+d\,x}\right] + \frac{1}{(c+d\,x)^{11}} 2\sqrt{b}\, F^{\frac{b}{(c+d\,x)^2}} \sqrt{\text{Log}[F]} \right.$$
$$\left. \left(10\,395\, (c+d\,x)^{10} - 6930\, b\, (c+d\,x)^8\, \text{Log}[F] + 2772\, b^2\, (c+d\,x)^6\, \text{Log}[F]^2 - 792\, b^3\, (c+d\,x)^4\, \text{Log}[F]^3 + 176\, b^4\, (c+d\,x)^2\, \text{Log}[F]^4 - 32\, b^5\, \text{Log}[F]^5\right)\right)$$

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

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

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

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

Result (type 4, 112 leaves):

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

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

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

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

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

Result (type 4, 96 leaves):

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

Problem 359: Unable to integrate problem.

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

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

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

Result (type 8, 23 leaves):

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

Problem 362: Unable to integrate problem.

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

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

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

Result (type 8, 21 leaves):

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

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

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

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

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

Result (type 4, 113 leaves):

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

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

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

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

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

Result (type 4, 131 leaves):

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

Problem 380: Unable to integrate problem.

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

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

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

Result (type 8, 27 leaves):

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

Problem 381: Unable to integrate problem.

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

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

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

Result (type 8, 28 leaves):

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

Problem 391: Unable to integrate problem.

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

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

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

Result (type 8, 21 leaves):

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

Problem 392: Unable to integrate problem.

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

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

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

Result (type 8, 21 leaves):

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

Problem 393: Unable to integrate problem.

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

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

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

Result (type 8, 19 leaves):

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

Problem 399: Unable to integrate problem.

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

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

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

Result (type 8, 23 leaves):

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

Problem 400: Unable to integrate problem.

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

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

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

Result (type 8, 23 leaves):

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

Problem 408: Unable to integrate problem.

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

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

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

Result (type 8, 21 leaves):

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

Problem 423: Unable to integrate problem.

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

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

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

Result (type 8, 28 leaves):

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

Problem 424: Unable to integrate problem.

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

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

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

Result (type 8, 28 leaves):

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

Problem 425: Unable to integrate problem.

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

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

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

Result (type 8, 28 leaves):

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

Problem 462: Result unnecessarily involves imaginary or complex numbers.

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

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

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

Result (type 4, 133 leaves):

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

Problem 463: Result unnecessarily involves imaginary or complex numbers.

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

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

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

Result (type 4, 93 leaves):

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

Problem 464: Result unnecessarily involves imaginary or complex numbers.

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

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

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

Result (type 4, 94 leaves):

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

Problem 465: Result unnecessarily involves imaginary or complex numbers.

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

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

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

Result (type 4, 83 leaves):

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

Problem 466: Result unnecessarily involves imaginary or complex numbers.

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

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

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

Result (type 4, 120 leaves):

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

Problem 485: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 36 leaves):

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

Problem 486: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 36 leaves):

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

Problem 487: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 36 leaves):

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

Problem 488: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 36 leaves):

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

Problem 524: Attempted integration timed out after 120 seconds.

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

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

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

Result (type 1, 1 leaves):

???

Problem 526: Unable to integrate problem.

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

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

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

Result (type 8, 31 leaves):

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

Problem 541: Unable to integrate problem.

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

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

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

Result (type 8, 29 leaves):

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

Problem 542: Unable to integrate problem.

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

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

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

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

Result (type 8, 31 leaves):

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

Problem 544: Unable to integrate problem.

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

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

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

Result (type 8, 52 leaves):

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

Problem 545: Unable to integrate problem.

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

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

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

Result (type 8, 52 leaves):

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

Problem 546: Unable to integrate problem.

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

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

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

Result (type 8, 50 leaves):

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

Problem 551: Unable to integrate problem.

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

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

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

Result (type 8, 49 leaves):

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

Problem 552: Unable to integrate problem.

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

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

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

Result (type 8, 49 leaves):

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

Problem 553: Unable to integrate problem.

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

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

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

Result (type 8, 47 leaves):

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

Problem 567: Unable to integrate problem.

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

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

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

Result (type 8, 12 leaves):

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

Problem 568: Unable to integrate problem.

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

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

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

Result (type 8, 12 leaves):

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

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

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

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

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

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

$$\frac{3\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)g\,(f+gx)^2\,\mathrm{PolyLog}\left[2,-\frac{2c\,e^{h+ix}}{b+\sqrt{b^2-4ac}}\right]}{\left(b+\sqrt{b^2-4ac}\right)i^2}+\frac{6\left(e+\frac{2cd-be}{\sqrt{b^2-4ac}}\right)g^2\,(f+gx)\,\mathrm{PolyLog}\left[3,-\frac{2c\,e^{h+ix}}{b-\sqrt{b^2-4ac}}\right]}{\left(b-\sqrt{b^2-4ac}\right)i^3}+$$

$$\frac{6\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)g^2\,(f+gx)\,\mathrm{PolyLog}\left[3,-\frac{2c\,e^{h+ix}}{b+\sqrt{b^2-4ac}}\right]}{\left(b+\sqrt{b^2-4ac}\right)i^3}-\frac{6\left(e+\frac{2cd-be}{\sqrt{b^2-4ac}}\right)g^3\,\mathrm{PolyLog}\left[4,-\frac{2c\,e^{h+ix}}{b-\sqrt{b^2-4ac}}\right]}{\left(b-\sqrt{b^2-4ac}\right)i^4}-\frac{6\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)g^3\,\mathrm{PolyLog}\left[4,-\frac{2c\,e^{h+ix}}{b+\sqrt{b^2-4ac}}\right]}{\left(b+\sqrt{b^2-4ac}\right)i^4}$$

Result (type 4, 3479 leaves) :

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

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

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

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

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

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

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

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

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

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

$$\left(2\, e^{-h} \left(\frac{x^4}{4 \left(b + \sqrt{b^2 - 4 a c}\right)} - \frac{x^3 \,\text{Log}\left[1 + \frac{2 c\, e^{h+i x}}{b + \sqrt{b^2-4 a c}}\right]}{\left(b + \sqrt{b^2 - 4 a c}\right) i} - \frac{3 x^2 \,\text{PolyLog}\left[2, -\frac{2 c\, e^{h+i x}}{b + \sqrt{b^2-4 a c}}\right]}{\left(b + \sqrt{b^2 - 4 a c}\right) i^2} + \frac{6 x \,\text{PolyLog}\left[3, -\frac{2 c\, e^{h+i x}}{b + \sqrt{b^2-4 a c}}\right]}{\left(b + \sqrt{b^2 - 4 a c}\right) i^3} - \right.\right.$$

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

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

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

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

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

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

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

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

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

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

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

Result (type 4, 1412 leaves) :

$$
\begin{aligned}
&-\frac{1}{6\,a\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;i^3}\\
&\quad\Bigg(-6\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d\,f^2\,i^3\,x-6\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d\,f\,g\,i^3\,x^2-2\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d\,g^2\,i^3\,x^3+6\,b\,\sqrt{b^2-4\,a\,c}\;d\,f^2\,i^2\,\mathrm{ArcTan}\left[\frac{b+2\,c\,\mathrm{e}^{h+i\,x}}{\sqrt{-b^2+4\,a\,c}}\right]-\\
&\quad 12\,a\,\sqrt{b^2-4\,a\,c}\;e\,f^2\,i^2\,\mathrm{ArcTan}\left[\frac{b+2\,c\,\mathrm{e}^{h+i\,x}}{\sqrt{-b^2+4\,a\,c}}\right]+6\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d\,f\,g\,i^2\,x\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]+\\
&\quad 6\,b\,\sqrt{-b^2+4\,a\,c}\;d\,f\,g\,i^2\,x\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]-12\,a\,\sqrt{-b^2+4\,a\,c}\;e\,f\,g\,i^2\,x\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]+\\
&\quad 3\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d\,g^2\,i^2\,x^2\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]+3\,b\,\sqrt{-b^2+4\,a\,c}\;d\,g^2\,i^2\,x^2\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]-\\
&\quad 6\,a\,\sqrt{-b^2+4\,a\,c}\;e\,g^2\,i^2\,x^2\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b-\sqrt{b^2-4\,a\,c}}\right]+6\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d\,f\,g\,i^2\,x\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]-\\
&\quad 6\,b\,\sqrt{-b^2+4\,a\,c}\;d\,f\,g\,i^2\,x\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]+12\,a\,\sqrt{-b^2+4\,a\,c}\;e\,f\,g\,i^2\,x\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]+\\
&\quad 3\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d\,g^2\,i^2\,x^2\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]-3\,b\,\sqrt{-b^2+4\,a\,c}\;d\,g^2\,i^2\,x^2\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]+\\
&\quad 6\,a\,\sqrt{-b^2+4\,a\,c}\;e\,g^2\,i^2\,x^2\,\mathrm{Log}\left[1+\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]+3\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d\,f^2\,i^2\,\mathrm{Log}\left[a+\mathrm{e}^{h+i\,x}\left(b+c\,\mathrm{e}^{h+i\,x}\right)\right]+\\
&\quad 6\left(\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d+b\,\sqrt{-b^2+4\,a\,c}\;d-2\,a\,\sqrt{-b^2+4\,a\,c}\;e\right)g\,i\,\left(f+g\,x\right)\mathrm{PolyLog}\left[2,\ \frac{2\,c\,\mathrm{e}^{h+i\,x}}{-b+\sqrt{b^2-4\,a\,c}}\right]+\\
&\quad 6\left(\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d-b\,\sqrt{-b^2+4\,a\,c}\;d+2\,a\,\sqrt{-b^2+4\,a\,c}\;e\right)g\,i\,\left(f+g\,x\right)\mathrm{PolyLog}\left[2,\ -\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]-\\
&\quad 6\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d\,g^2\,\mathrm{PolyLog}\left[3,\ \frac{2\,c\,\mathrm{e}^{h+i\,x}}{-b+\sqrt{b^2-4\,a\,c}}\right]-6\,b\,\sqrt{-b^2+4\,a\,c}\;d\,g^2\,\mathrm{PolyLog}\left[3,\ \frac{2\,c\,\mathrm{e}^{h+i\,x}}{-b+\sqrt{b^2-4\,a\,c}}\right]+\\
&\quad 12\,a\,\sqrt{-b^2+4\,a\,c}\;e\,g^2\,\mathrm{PolyLog}\left[3,\ \frac{2\,c\,\mathrm{e}^{h+i\,x}}{-b+\sqrt{b^2-4\,a\,c}}\right]-6\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;d\,g^2\,\mathrm{PolyLog}\left[3,\ -\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]+\\
&\quad 6\,b\,\sqrt{-b^2+4\,a\,c}\;d\,g^2\,\mathrm{PolyLog}\left[3,\ -\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]-12\,a\,\sqrt{-b^2+4\,a\,c}\;e\,g^2\,\mathrm{PolyLog}\left[3,\ -\frac{2\,c\,\mathrm{e}^{h+i\,x}}{b+\sqrt{b^2-4\,a\,c}}\right]\Bigg)
\end{aligned}
$$

Problem 579: Unable to integrate problem.

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

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

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

Result (type 8, 20 leaves):

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

Problem 580: Unable to integrate problem.

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

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

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

Result (type 8, 18 leaves):

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

Problem 581: Unable to integrate problem.

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

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

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

Result (type 8, 16 leaves):

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

Problem 583: Unable to integrate problem.

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

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

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

Result (type 8, 20 leaves):

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

Problem 584: Unable to integrate problem.

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

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

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

Result (type 8, 20 leaves):

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

Problem 585: Unable to integrate problem.

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

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

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

Result (type 8, 22 leaves):

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

Problem 586: Unable to integrate problem.

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

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

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

Result (type 8, 22 leaves):

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

Problem 587: Unable to integrate problem.

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

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

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

Result (type 8, 33 leaves):

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

Problem 602: Unable to integrate problem.

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

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

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

Result (type 8, 33 leaves):

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

Problem 619: Unable to integrate problem.

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

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

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

Result (type 8, 33 leaves):

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

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

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

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

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

Result (type 3, 42 leaves):

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

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

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

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

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

Result (type 3, 23 leaves):

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

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

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

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

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

Result (type 3, 23 leaves):

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

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

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

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

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

Result (type 3, 11 leaves):

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

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

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

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

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

Result (type 3, 79 leaves):

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

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

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

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

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

Result (type 3, 26 leaves):

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

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

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

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

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

Result (type 3, 23 leaves):

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

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

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

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

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

Result (type 3, 32 leaves):

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

Problem 767: Unable to integrate problem.

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

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

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

Result (type 8, 17 leaves):

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

Problem 768: Unable to integrate problem.

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

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

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

Result (type 8, 21 leaves):

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

Problem 771: Unable to integrate problem.

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

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

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

Result (type 8, 19 leaves):

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

Problem 772: Unable to integrate problem.

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

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

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

Result (type 8, 19 leaves):

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

Problem 773: Unable to integrate problem.

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

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

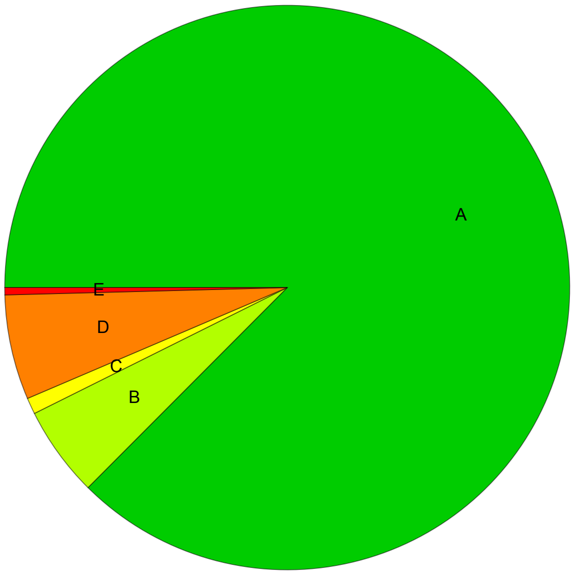
$$\frac{a\,(a+b\,x)\,\text{Gamma}\left[\frac{1}{3},\,-(a+b\,x)^3\right]}{3\,b^2\,\left(-(a+b\,x)^3\right)^{1/3}}-\frac{(a+b\,x)^2\,\text{Gamma}\left[\frac{2}{3},\,-(a+b\,x)^3\right]}{3\,b^2\,\left(-(a+b\,x)^3\right)^{2/3}}$$

Result (type 8, 13 leaves):

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

Summary of Integration Test Results

965 integration problems



A - 844 optimal antiderivatives

B - 50 more than twice size of optimal antiderivatives

C - 9 unnecessarily complex antiderivatives

D - 58 unable to integrate problems

E - 4 integration timeouts