Mathematica 11.3 Integration Test Results

Test results for the 547 problems in "3.3 u (a+b log(c (d+e x)^n))^p.m"

Problem 17: Result more than twice size of optimal antiderivative.

$$\int \left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right)^4 \, dx$$

Optimal (type 3, 131 leaves, 6 steps):

$$-24 a b^3 n^3 x + 24 b^4 n^4 x - \frac{24 b^4 n^3 (d + e x) \operatorname{Log}\left[c (d + e x)^n\right]}{e} + \frac{12 b^2 n^2 (d + e x) \left(a + b \operatorname{Log}\left[c (d + e x)^n\right]\right)^2}{e} - \frac{4 b n (d + e x) \left(a + b \operatorname{Log}\left[c (d + e x)^n\right]\right)^3}{e} + \frac{(d + e x) \left(a + b \operatorname{Log}\left[c (d + e x)^n\right]\right)^4}{e}$$

Result (type 3, 390 leaves):

$$\frac{1}{e} \Big(-b^4 d n^4 \operatorname{Log}[d + e x]^4 + 4 b^3 d n^3 \operatorname{Log}[d + e x]^3 \left(a - b n + b \operatorname{Log}\left[c (d + e x)^n\right]\right) - 6 b^2 d n^2 \operatorname{Log}[d + e x]^2 \left(a^2 - 2 a b n + 2 b^2 n^2 + 2 b (a - b n) \operatorname{Log}\left[c (d + e x)^n\right] + b^2 \operatorname{Log}\left[c (d + e x)^n\right]^2\right) + 4 b d n \operatorname{Log}[d + e x] \left(a^3 - 3 a^2 b n + 6 a b^2 n^2 - 6 b^3 n^3 + 3 b \left(a^2 - 2 a b n + 2 b^2 n^2\right) \operatorname{Log}\left[c (d + e x)^n\right] + 3 b^2 (a - b n) \operatorname{Log}\left[c (d + e x)^n\right]^2 + b^3 \operatorname{Log}\left[c (d + e x)^n\right]^3\right) + e x \Big(a^4 - 4 a^3 b n + 12 a^2 b^2 n^2 - 24 a b^3 n^3 + 24 b^4 n^4 + 4 b \left(a^3 - 3 a^2 b n + 6 a b^2 n^2 - 6 b^3 n^3\right) \operatorname{Log}\left[c (d + e x)^n\right] + 6 b^2 \left(a^2 - 2 a b n + 2 b^2 n^2\right) \operatorname{Log}\left[c (d + e x)^n\right]^2 + 4 b^3 (a - b n) \operatorname{Log}\left[c (d + e x)^n\right]^3 + b^4 \operatorname{Log}\left[c (d + e x)^n\right]^4\Big)\Big)$$

Problem 18: Result more than twice size of optimal antiderivative.

$$\int \left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right)^3 \, dx$$

Optimal (type 3, 99 leaves, 5 steps):

$$6 a b^2 n^2 x - 6 b^3 n^3 x + \frac{6 b^3 n^2 (d + e x) \operatorname{Log}\left[c (d + e x)^n\right]}{e} - \frac{3 b n (d + e x) \left(a + b \operatorname{Log}\left[c (d + e x)^n\right]\right)^2}{e} + \frac{(d + e x) \left(a + b \operatorname{Log}\left[c (d + e x)^n\right]\right)^3}{e}$$

Result (type 3, 219 leaves):

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

Problem 24: Unable to integrate problem.

$$\int \left(a + b \text{Log}\left[c \left(d+e x\right)^n\right]\right)^{5/2} dx$$

Optimal (type 4, 179 leaves, 7 steps):

$$-\frac{1}{8 e} 15 b^{5/2} e^{-\frac{a}{b n}} n^{5/2} \sqrt{\pi} \left(d+e x\right) \left(c \left(d+e x\right)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}\left[c \left(d+e x\right)^n\right]}}{\sqrt{b} \sqrt{n}}\right] + \frac{15 b^2 n^2 \left(d+e x\right) \sqrt{a + b \text{Log}\left[c \left(d+e x\right)^n\right]}}{4 e} - \frac{5 b n \left(d+e x\right) \left(a + b \text{Log}\left[c \left(d+e x\right)^n\right]\right)^{3/2}}{2 e} + \frac{\left(d+e x\right) \left(a + b \text{Log}\left[c \left(d+e x\right)^n\right]\right)^{5/2}}{e}$$

Result (type 8, 20 leaves):

$$\int \left(a + b \text{Log}\left[c \left(d+e x\right)^n\right]\right)^{5/2} dx$$

Problem 25: Unable to integrate problem.

$$\int \left(a + b \text{Log}\left[c \left(d+e x\right)^n\right]\right)^{3/2} dx$$

Optimal (type 4, 143 leaves, 6 steps):

$$\frac{3 b^{3/2} e^{-\frac{a}{b n}} n^{3/2} \sqrt{\pi} \left(d+e x\right) \left(c \left(d+e x\right)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c \left(d+e x\right)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{4 e} - \frac{3 b n \left(d+e x\right) \sqrt{a + b \text{Log}\left[c \left(d+e x\right)^n\right]}}{2 e} + \frac{\left(d+e x\right) \left(a + b \text{Log}\left[c \left(d+e x\right)^n\right]\right)^{3/2}}{e}$$

Result (type 8, 20 leaves):

$$\int \left(a + b \text{Log}\left[c \left(d+e x\right)^n\right]\right)^{3/2} dx$$

Problem 26: Unable to integrate problem.

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

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

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

Result (type 8, 20 leaves) :

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

Problem 52: Result more than twice size of optimal antiderivative.

$$\int (f+g x)^3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3 dx$$

Optimal (type 3, 598 leaves, 19 steps) :

$$\frac{6 a b^2 (e f-d g)^3 n^2 x}{e^3}-\frac{6 b^3 (e f-d g)^3 n^3 x}{e^3}-\frac{9 b^3 g (e f-d g)^2 n^3 (d+e x)^2}{8 e^4}-$$
$$\frac{2 b^3 g^2 (e f-d g) n^3 (d+e x)^3}{9 e^4}-\frac{3 b^3 g^3 n^3 (d+e x)^4}{128 e^4}+\frac{6 b^3 (e f-d g)^3 n^2 (d+e x) \text{Log}\left[c (d+e x)^n\right]}{e^4}+$$
$$\frac{9 b^2 g (e f-d g)^2 n^2 (d+e x)^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{4 e^4}+$$
$$\frac{2 b^2 g^2 (e f-d g) n^2 (d+e x)^3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{3 e^4}+$$
$$\frac{3 b^2 g^3 n^2 (d+e x)^4 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{32 e^4}-\frac{3 b (e f-d g)^3 n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{e^4}-$$
$$\frac{9 b g (e f-d g)^2 n (d+e x)^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{4 e^4}-$$
$$\frac{b g^2 (e f-d g) n (d+e x)^3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{e^4}-\frac{3 b g^3 n (d+e x)^4 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{16 e^4}+$$
$$\frac{(e f-d g)^3 (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3}{e^4}+\frac{3 g (e f-d g)^2 (d+e x)^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3}{2 e^4}+$$
$$\frac{g^2 (e f-d g) (d+e x)^3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3}{e^4}+\frac{g^3 (d+e x)^4 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3}{4 e^4}$$

Result (type 3, 1241 leaves) :

$$\frac{1}{1152\,e^4}\Big(-288\,b^3\,d\,\left(-4\,e^3\,f^3+6\,d\,e^2\,f^2\,g-4\,d^2\,e\,f\,g^2+d^3\,g^3\right)\,n^3\,\text{Log}[d+e\,x]^3+72\,b^2\,d\,n^2\,\text{Log}[d+e\,x]^2\\ \left(-12\,a\,\left(4\,e^3\,f^3-6\,d\,e^2\,f^2\,g+4\,d^2\,e\,f\,g^2-d^3\,g^3\right)+b\,\left(48\,e^3\,f^3-108\,d\,e^2\,f^2\,g+88\,d^2\,e\,f\,g^2-25\,d^3\,g^3\right)\right.\\ \left.n-12\,b\,\left(4\,e^3\,f^3-6\,d\,e^2\,f^2\,g+4\,d^2\,e\,f\,g^2-d^3\,g^3\right)\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)-\\ 12\,b\,d\,n\,\text{Log}[d+e\,x]\,\Big(-72\,a^2\,\left(4\,e^3\,f^3-6\,d\,e^2\,f^2\,g+4\,d^2\,e\,f\,g^2-d^3\,g^3\right)+\\ 12\,a\,b\,\left(48\,e^3\,f^3-108\,d\,e^2\,f^2\,g+88\,d^2\,e\,f\,g^2-25\,d^3\,g^3\right)\,n+\\ b^2\,\left(-576\,e^3\,f^3+1512\,d\,e^2\,f^2\,g-1360\,d^2\,e\,f\,g^2+415\,d^3\,g^3\right)\,n^2-\\ 12\,b\,\Big(12\,a\,\left(4\,e^3\,f^3-6\,d\,e^2\,f^2\,g+4\,d^2\,e\,f\,g^2-d^3\,g^3\right)+\\ b\,\left(-48\,e^3\,f^3+108\,d\,e^2\,f^2\,g-88\,d^2\,e\,f\,g^2+25\,d^3\,g^3\right)\,n\Big)\,\text{Log}\left[c\,(d+e\,x)^n\right]-\\ 72\,b^2\,\left(4\,e^3\,f^3-6\,d\,e^2\,f^2\,g+4\,d^2\,e\,f\,g^2-d^3\,g^3\right)\,\text{Log}\left[c\,(d+e\,x)^n\right]^2\Big)+\\ e\,x\,\Big(288\,a^3\,e^3\,\left(4\,f^3+6\,f^2\,g\,x+4\,f\,g^2\,x^2+g^3\,x^3\right)-72\,a^2\,b\,n\,\Big(-12\,d^3\,g^3+6\,d^2\,e\,g^2\,(8\,f+g\,x)-\\ 4\,d\,e^2\,g\,\left(18\,f^2+6\,f\,g\,x+g^2\,x^2\right)+e^3\,\left(48\,f^3+36\,f^2\,g\,x+16\,f\,g^2\,x^2+3\,g^3\,x^3\right)\Big)+\\ 12\,a\,b^2\,n^2\,\Big(-300\,d^3\,g^3+6\,d^2\,e\,g^2\,(176\,f+13\,g\,x)-4\,d\,e^2\,g\,\left(324\,f^2+60\,f\,g\,x+7\,g^2\,x^2\right)+\\ e^3\,\left(576\,f^3+216\,f^2\,g\,x+64\,f\,g^2\,x^2+9\,g^3\,x^3\right)\Big)-b^3\,n^3\,\Big(-4980\,d^3\,g^3+30\,d^2\,e\,g^2\,(544\,f+23\,g\,x)-\\ 4\,d\,e^2\,g\,\left(4536\,f^2+456\,f\,g\,x+37\,g^2\,x^2\right)+e^3\,\left(6912\,f^3+1296\,f^2\,g\,x+256\,f\,g^2\,x^2+27\,g^3\,x^3\right)\Big)+\\ 12\,b\,\Big(72\,a^2\,e^3\,\left(4\,f^3+6\,f^2\,g\,x+4\,f\,g^2\,x^2+g^3\,x^3\right)-12\,a\,b\,n\,\Big(-12\,d^3\,g^3+6\,d^2\,e\,g^2\,(8\,f+g\,x)-\\ 4\,d\,e^2\,g\,\left(18\,f^2+6\,f\,g\,x+g^2\,x^2\right)+e^3\,\left(48\,f^3+36\,f^2\,g\,x+16\,f\,g^2\,x^2+3\,g^3\,x^3\right)\Big)+\\ b^2\,n^2\,\Big(-300\,d^3\,g^3+6\,d^2\,e\,g^2\,(176\,f+13\,g\,x)-4\,d\,e^2\,g\,\left(324\,f^2+60\,f\,g\,x+7\,g^2\,x^2\right)+\\ e^3\,\left(576\,f^3+216\,f^2\,g\,x+64\,f\,g^2\,x^2+9\,g^3\,x^3\right)\Big)\Big)\,\text{Log}\left[c\,(d+e\,x)^n\right]+\\ 72\,b^2\,\Big(12\,a\,e^3\,\left(4\,f^3+6\,f^2\,g\,x+4\,f\,g^2\,x^2+g^3\,x^3\right)-b\,n\,\Big(-12\,d^3\,g^3+6\,d^2\,e\,g^2\,(8\,f+g\,x)-\\ 4\,d\,e^2\,g\,\left(18\,f^2+6\,f\,g\,x+g^2\,x^2\right)+e^3\,\left(48\,f^3+36\,f^2\,g\,x+16\,f\,g^2\,x^2+3\,g^3\,x^3\right)\Big)\Big)\\ \text{Log}\left[c\,(d+e\,x)^n\right]^2+288\,b^3\,e^3\,\left(4\,f^3+6\,f^2\,g\,x+4\,f\,g^2\,x^2+g^3\,x^3\right)\,\text{Log}\left[c\,(d+e\,x)^n\right]^3\Big)\Big)$$

Problem 55: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 99 leaves, 5 steps):

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

Result (type 3, 219 leaves):

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

Problem 56: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 158 leaves, 5 steps):

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

Result (type 4, 335 leaves):

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

Problem 57: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 190 leaves, 5 steps):

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

Result (type 4, 410 leaves):

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

Problem 60: Result more than twice size of optimal antiderivative.

$$\int (f+g x)\,\left(a+b\,\mathrm{Log}\left[c\,(d+e x)^n\right]\right)^4\,dx$$

Optimal (type 3, 340 leaves, 13 steps):

$$-\frac{24 a b^3\,(e f-d g)\,n^3 x}{e}+\frac{24 b^4\,(e f-d g)\,n^4 x}{e}+\frac{3 b^4 g n^4\,(d+e x)^2}{4 e^2}-$$
$$\frac{24 b^4\,(e f-d g)\,n^3\,(d+e x)\,\mathrm{Log}\left[c\,(d+e x)^n\right]}{e^2}-\frac{3 b^3 g n^3\,(d+e x)^2\,\left(a+b\,\mathrm{Log}\left[c\,(d+e x)^n\right]\right)}{2 e^2}+$$
$$\frac{12 b^2\,(e f-d g)\,n^2\,(d+e x)\,\left(a+b\,\mathrm{Log}\left[c\,(d+e x)^n\right]\right)^2}{e^2}+$$
$$\frac{3 b^2 g n^2\,(d+e x)^2\,\left(a+b\,\mathrm{Log}\left[c\,(d+e x)^n\right]\right)^2}{2 e^2}-$$
$$\frac{4 b\,(e f-d g)\,n\,(d+e x)\,\left(a+b\,\mathrm{Log}\left[c\,(d+e x)^n\right]\right)^3}{e^2}-\frac{b g n\,(d+e x)^2\,\left(a+b\,\mathrm{Log}\left[c\,(d+e x)^n\right]\right)^3}{e^2}+$$
$$\frac{(e f-d g)\,(d+e x)\,\left(a+b\,\mathrm{Log}\left[c\,(d+e x)^n\right]\right)^4}{e^2}+\frac{g\,(d+e x)^2\,\left(a+b\,\mathrm{Log}\left[c\,(d+e x)^n\right]\right)^4}{2 e^2}$$

Result (type 3, 748 leaves):

$$\frac{1}{4 e^2}\Big(2 b^4 d (-2 e f+d g) n^4 \text{Log}[d+e x]^4 - 4 b^3 d n^3 \text{Log}[d+e x]^3 \left(-4 a e f+2 a d g+4 b e f n-3 b d g n+b (-4 e f+2 d g) \text{Log}\left[c (d+e x)^n\right]\right) + 6 b^2 d n^2 \text{Log}[d+e x]^2 \Big(a^2 (-4 e f+2 d g)+2 a b (4 e f-3 d g) n + b^2 (-8 e f+7 d g) n^2+2 b (-4 a e f+2 a d g+4 b e f n-3 b d g n) \text{Log}\left[c (d+e x)^n\right] + 2 b^2 (-2 e f+d g) \text{Log}\left[c (d+e x)^n\right]^2\Big) - 2 b d n \text{Log}[d+e x] \Big(a^3 (-8 e f+4 d g)+6 a^2 b (4 e f-3 d g) n-6 a b^2 (8 e f-7 d g) n^2+3 b^3 (16 e f-15 d g) n^3 - 6 b \left(a^2 (4 e f-2 d g)+b^2 (8 e f-7 d g) n^2+a b (-8 e f n+6 d g n)\right) \text{Log}\left[c (d+e x)^n\right] + 6 b^2 (-4 a e f+2 a d g+4 b e f n-3 b d g n) \text{Log}\left[c (d+e x)^n\right]^2 + 4 b^3 (-2 e f+d g) \text{Log}\left[c (d+e x)^n\right]^3\Big) + e x \Big(2 a^4 e (2 f+g x)+3 b^4 n^4 (32 e f-30 d g+e g x)-6 a b^3 n^3 (16 e f-14 d g+e g x) + 6 a^2 b^2 n^2 (8 e f-6 d g+e g x)-4 a^3 b n (4 e f-2 d g+e g x) + 2 b \left(4 a^3 e (2 f+g x)-3 b^3 n^3 (16 e f-14 d g+e g x) + 6 a b^2 n^2 (8 e f-6 d g+e g x)-6 a^2 b n (4 e f-2 d g+e g x)\right) \text{Log}\left[c (d+e x)^n\right] + 6 b^2 \left(2 a^2 e (2 f+g x)+b^2 n^2 (8 e f-6 d g+e g x)-2 a b n (4 e f-2 d g+e g x)\right) \text{Log}\left[c (d+e x)^n\right]^2+4 b^3 \left(2 a e (2 f+g x)-b n (4 e f-2 d g+e g x)\right) \text{Log}\left[c (d+e x)^n\right]^3+2 b^4 e (2 f+g x) \text{Log}\left[c (d+e x)^n\right]^4\Big)\Big)$$

Problem 61: Result more than twice size of optimal antiderivative.

$$\int \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^4 dx$$

Optimal (type 3, 131 leaves, 6 steps):

$$-24 a b^3 n^3 x+24 b^4 n^4 x-\frac{24 b^4 n^3 (d+e x) \text{Log}\left[c (d+e x)^n\right]}{e}+\frac{12 b^2 n^2 (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{e}-\frac{4 b n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3}{e}+\frac{(d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^4}{e}$$

Result (type 3, 390 leaves):

$$\frac{1}{e}\Big(-b^4 d n^4 \text{Log}[d+e x]^4+4 b^3 d n^3 \text{Log}[d+e x]^3 \left(a-b n+b \text{Log}\left[c (d+e x)^n\right]\right) - 6 b^2 d n^2 \text{Log}[d+e x]^2 \left(a^2-2 a b n+2 b^2 n^2+2 b (a-b n) \text{Log}\left[c (d+e x)^n\right]+b^2 \text{Log}\left[c (d+e x)^n\right]^2\right) + 4 b d n \text{Log}[d+e x] \left(a^3-3 a^2 b n+6 a b^2 n^2-6 b^3 n^3+3 b \left(a^2-2 a b n+2 b^2 n^2\right) \text{Log}\left[c (d+e x)^n\right] + 3 b^2 (a-b n) \text{Log}\left[c (d+e x)^n\right]^2+b^3 \text{Log}\left[c (d+e x)^n\right]^3\right) + e x \Big(a^4-4 a^3 b n+12 a^2 b^2 n^2-24 a b^3 n^3+24 b^4 n^4+4 b \left(a^3-3 a^2 b n+6 a b^2 n^2-6 b^3 n^3\right) \text{Log}\left[c (d+e x)^n\right]+6 b^2 \left(a^2-2 a b n+2 b^2 n^2\right) \text{Log}\left[c (d+e x)^n\right]^2 + 4 b^3 (a-b n) \text{Log}\left[c (d+e x)^n\right]^3+b^4 \text{Log}\left[c (d+e x)^n\right]^4\Big)\Big)$$

Problem 62: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^4}{f+g x} \, dx$$

Optimal (type 4, 205 leaves, 6 steps):

$$\frac{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^4 \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]}{g}+\frac{4 b n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3 \operatorname{PolyLog}\left[2,-\frac{g (d+e x)}{e f-d g}\right]}{g}-\frac{12 b^2 n^2 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{PolyLog}\left[3,-\frac{g (d+e x)}{e f-d g}\right]}{g}+\frac{24 b^3 n^3 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[4,-\frac{g (d+e x)}{e f-d g}\right]}{g}-\frac{24 b^4 n^4 \operatorname{PolyLog}\left[5,-\frac{g (d+e x)}{e f-d g}\right]}{g}$$

Result (type 4, 503 leaves):

$$\frac{1}{g}\Bigg(\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^4 \operatorname{Log}[f+g x]+ 4 b n \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3 \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]+\operatorname{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]\right)+ 6 b^2 n^2 \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \left(\operatorname{Log}[d+e x]^2 \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]+ 2 \operatorname{Log}[d+e x] \operatorname{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]-2 \operatorname{PolyLog}\left[3,\frac{g (d+e x)}{-e f+d g}\right]\right)- 4 b^3 n^3 \left(-a+b n \operatorname{Log}[d+e x]-b \operatorname{Log}\left[c (d+e x)^n\right]\right) \left(\operatorname{Log}[d+e x]^3 \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]+3 \operatorname{Log}[d+e x]^2 \operatorname{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]- 6 \operatorname{Log}[d+e x] \operatorname{PolyLog}\left[3,\frac{g (d+e x)}{-e f+d g}\right]+6 \operatorname{PolyLog}\left[4,\frac{g (d+e x)}{-e f+d g}\right]\right)+ b^4 n^4 \left(\operatorname{Log}[d+e x]^4 \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]+4 \operatorname{Log}[d+e x]^3 \operatorname{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]- 12 \operatorname{Log}[d+e x]^2 \operatorname{PolyLog}\left[3,\frac{g (d+e x)}{-e f+d g}\right]+ 24 \operatorname{Log}[d+e x] \operatorname{PolyLog}\left[4,\frac{g (d+e x)}{-e f+d g}\right]-24 \operatorname{PolyLog}\left[5,\frac{g (d+e x)}{-e f+d g}\right]\right)\Bigg)$$

Problem 63: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 248 leaves, 6 steps):

$$\frac{(d+e x)\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^4}{(e f-d g)(f+g x)}-\frac{4 b e n\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3 \text{Log}\left[\frac{e (f+g x)}{e f-d g}\right]}{g (e f-d g)}-\frac{12 b^2 e n^2\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{PolyLog}\left[2,-\frac{g (d+e x)}{e f-d g}\right]}{g (e f-d g)}+\frac{24 b^3 e n^3\left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[3,-\frac{g (d+e x)}{e f-d g}\right]}{g (e f-d g)}-\frac{24 b^4 e n^4 \text{PolyLog}\left[4,-\frac{g (d+e x)}{e f-d g}\right]}{g (e f-d g)}$$

Result (type 4, 531 leaves):

$$\frac{1}{g (e f-d g)(f+g x)}\Bigg(-(e f-d g)\left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^4+4 b n\left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^3\left(g (d+e x) \text{Log}[d+e x]-e (f+g x) \text{Log}\left[\frac{e (f+g x)}{e f-d g}\right]\right)+6 b^2 n^2\left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2\left(\text{Log}[d+e x]\left(g (d+e x) \text{Log}[d+e x]-2 e (f+g x) \text{Log}\left[\frac{e (f+g x)}{e f-d g}\right]\right)-2 e (f+g x) \text{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]\right)+4 b^3 n^3\left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)\left(\text{Log}[d+e x]^2\left(g (d+e x) \text{Log}[d+e x]-3 e (f+g x) \text{Log}\left[\frac{e (f+g x)}{e f-d g}\right]\right)-6 e (f+g x) \text{Log}[d+e x] \text{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]+6 e (f+g x) \text{PolyLog}\left[3,\frac{g (d+e x)}{-e f+d g}\right]\right)+b^4 n^4\left(g (d+e x) \text{Log}[d+e x]^4-4 e (f+g x) \text{Log}[d+e x]^3 \text{Log}\left[\frac{e (f+g x)}{e f-d g}\right]-12 e (f+g x) \text{Log}[d+e x]^2 \text{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]+24 e (f+g x) \text{Log}[d+e x] \text{PolyLog}\left[3,\frac{g (d+e x)}{-e f+d g}\right]-24 e (f+g x) \text{PolyLog}\left[4,\frac{g (d+e x)}{-e f+d g}\right]\right)\Bigg)$$

Problem 71: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[-\frac{g (d+e x)}{e f-d g}\right]}{f+g x}\, dx$$

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

$$-\frac{\text{PolyLog}\left[2,\frac{e (f+g x)}{e f-d g}\right]}{g}$$

Result (type 4, 61 leaves):

$$\frac{\text{Log}\left[\frac{g (d+e x)}{-e f+d g}\right] \text{Log}\left[\frac{e (f+g x)}{e f-d g}\right]+\text{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]}{g}$$

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

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

Optimal (type 4, 339 leaves, 26 steps):

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

Result (type 4, 1674 leaves):

$$\frac{1}{b^2 e^4 n^2 \left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)}$$
$$e^{-\frac{4 a}{b n}} \left(c (d+e x)^n\right)^{-4/n} \Bigg(-b d e^3 e^{\frac{4 a}{b n}} f^3 n \left(c (d+e x)^n\right)^{4/n}-b e^4 e^{\frac{4 a}{b n}} f^3 n x \left(c (d+e x)^n\right)^{4/n}-$$
$$3 b d e^3 e^{\frac{4 a}{b n}} f^2 g n x \left(c (d+e x)^n\right)^{4/n}-3 b e^4 e^{\frac{4 a}{b n}} f^2 g n x^2 \left(c (d+e x)^n\right)^{4/n}-$$
$$3 b d e^3 e^{\frac{4 a}{b n}} f g^2 n x^2 \left(c (d+e x)^n\right)^{4/n}-3 b e^4 e^{\frac{4 a}{b n}} f g^2 n x^3 \left(c (d+e x)^n\right)^{4/n}-$$
$$b d e^3 e^{\frac{4 a}{b n}} g^3 n x^3 \left(c (d+e x)^n\right)^{4/n}-b e^4 e^{\frac{4 a}{b n}} g^3 n x^4 \left(c (d+e x)^n\right)^{4/n}+$$
$$a e^3 e^{\frac{3 a}{b n}} f^3 (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{ExpIntegralEi}\left[\frac{a+b\,\text{Log}\left[c (d+e x)^n\right]}{b n}\right]-$$
$$3 a d e^2 e^{\frac{3 a}{b n}} f^2 g (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{ExpIntegralEi}\left[\frac{a+b\,\text{Log}\left[c (d+e x)^n\right]}{b n}\right]+$$
$$3 a d^2 e\, e^{\frac{3 a}{b n}} f g^2 (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{ExpIntegralEi}\left[\frac{a+b\,\text{Log}\left[c (d+e x)^n\right]}{b n}\right]-$$
$$a d^3 e^{\frac{3 a}{b n}} g^3 (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{ExpIntegralEi}\left[\frac{a+b\,\text{Log}\left[c (d+e x)^n\right]}{b n}\right]+$$
$$6 a e^2 e^{\frac{2 a}{b n}} f^2 g (d+e x)^2 \left(c (d+e x)^n\right)^{2/n} \text{ExpIntegralEi}\left[\frac{2 \left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)}{b n}\right]-$$
$$12 a d e\, e^{\frac{2 a}{b n}} f g^2 (d+e x)^2 \left(c (d+e x)^n\right)^{2/n} \text{ExpIntegralEi}\left[\frac{2 \left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)}{b n}\right]+$$

$$6 a d^2 e^{\frac{2a}{bn}} g^3 (d+e x)^2 \left(c (d+e x)^n\right)^{2/n} \text{ExpIntegralEi}\left[\frac{2 (a+b \text{Log}[c (d+e x)^n])}{b n}\right] +$$
$$9 a e e^{\frac{a}{bn}} f g^2 (d+e x)^3 \left(c (d+e x)^n\right)^{\frac{1}{n}} \text{ExpIntegralEi}\left[\frac{3 (a+b \text{Log}[c (d+e x)^n])}{b n}\right] -$$
$$9 a d e^{\frac{a}{bn}} g^3 (d+e x)^3 \left(c (d+e x)^n\right)^{\frac{1}{n}} \text{ExpIntegralEi}\left[\frac{3 (a+b \text{Log}[c (d+e x)^n])}{b n}\right] +$$
$$4 a g^3 (d+e x)^4 \text{ExpIntegralEi}\left[\frac{4 (a+b \text{Log}[c (d+e x)^n])}{b n}\right] +$$
$$b e^3 e^{\frac{3a}{bn}} f^3 (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{ExpIntegralEi}\left[\frac{a+b \text{Log}[c (d+e x)^n]}{b n}\right] \text{Log}[c (d+e x)^n] -$$
$$3 b d e^2 e^{\frac{3a}{bn}} f^2 g (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{ExpIntegralEi}\left[\frac{a+b \text{Log}[c (d+e x)^n]}{b n}\right]$$
$$\text{Log}[c (d+e x)^n] + 3 b d^2 e e^{\frac{3a}{bn}} f g^2 (d+e x) \left(c (d+e x)^n\right)^{3/n}$$
$$\text{ExpIntegralEi}\left[\frac{a+b \text{Log}[c (d+e x)^n]}{b n}\right] \text{Log}[c (d+e x)^n] -$$
$$b d^3 e^{\frac{3a}{bn}} g^3 (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{ExpIntegralEi}\left[\frac{a+b \text{Log}[c (d+e x)^n]}{b n}\right] \text{Log}[c (d+e x)^n] +$$
$$6 b e^2 e^{\frac{2a}{bn}} f^2 g (d+e x)^2 \left(c (d+e x)^n\right)^{2/n} \text{ExpIntegralEi}\left[\frac{2 (a+b \text{Log}[c (d+e x)^n])}{b n}\right]$$
$$\text{Log}[c (d+e x)^n] - 12 b d e e^{\frac{2a}{bn}} f g^2 (d+e x)^2 \left(c (d+e x)^n\right)^{2/n}$$
$$\text{ExpIntegralEi}\left[\frac{2 (a+b \text{Log}[c (d+e x)^n])}{b n}\right] \text{Log}[c (d+e x)^n] + 6 b d^2 e^{\frac{2a}{bn}} g^3 (d+e x)^2$$
$$\left(c (d+e x)^n\right)^{2/n} \text{ExpIntegralEi}\left[\frac{2 (a+b \text{Log}[c (d+e x)^n])}{b n}\right] \text{Log}[c (d+e x)^n] + 9 b e e^{\frac{a}{bn}} f g^2$$
$$(d+e x)^3 \left(c (d+e x)^n\right)^{\frac{1}{n}} \text{ExpIntegralEi}\left[\frac{3 (a+b \text{Log}[c (d+e x)^n])}{b n}\right] \text{Log}[c (d+e x)^n] - 9 b d$$
$$e^{\frac{a}{bn}} g^3 (d+e x)^3 \left(c (d+e x)^n\right)^{\frac{1}{n}} \text{ExpIntegralEi}\left[\frac{3 (a+b \text{Log}[c (d+e x)^n])}{b n}\right] \text{Log}[c (d+e x)^n] +$$
$$4 b g^3 (d+e x)^4 \text{ExpIntegralEi}\left[\frac{4 (a+b \text{Log}[c (d+e x)^n])}{b n}\right] \text{Log}[c (d+e x)^n] \Bigg)$$

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

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

Optimal (type 4, 259 leaves, 20 steps):

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

Result (type 4, 1015 leaves) :

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

Problem 105: Unable to integrate problem.

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

Optimal (type 4, 404 leaves, 17 steps):

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

Result (type 8, 28 leaves) :

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

Problem 106: Unable to integrate problem.

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

Optimal (type 4, 255 leaves, 12 steps) :

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

Result (type 8, 26 leaves) :

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

Problem 107: Unable to integrate problem.

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

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

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

Result (type 8, 20 leaves):

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

Problem 111: Unable to integrate problem.

$$\int (f+g x)^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2} dx$$

Optimal (type 4, 526 leaves, 20 steps):

$$\frac{1}{4 e^3} 3 b^{3/2} e^{-\frac{a}{b n}} (e f-d g)^2 n^{3/2} \sqrt{\pi}\, (d+e x) \left(c (d+e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]+\frac{1}{8 e^3}$$
$$3 b^{3/2} e^{-\frac{2 a}{b n}} g (e f-d g) n^{3/2} \sqrt{\frac{\pi}{2}} (d+e x)^2 \left(c (d+e x)^n\right)^{-2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]+$$
$$\frac{1}{12 e^3} b^{3/2} e^{-\frac{3 a}{b n}} g^2 n^{3/2} \sqrt{\frac{\pi}{3}} (d+e x)^3 \left(c (d+e x)^n\right)^{-3/n} \text{Erfi}\left[\frac{\sqrt{3} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]-$$
$$\frac{3 b (e f-d g)^2 n (d+e x) \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{2 e^3}-$$
$$\frac{3 b g (e f-d g) n (d+e x)^2 \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{4 e^3}-$$
$$\frac{b g^2 n (d+e x)^3 \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{6 e^3}+\frac{(e f-d g)^2 (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2}}{e^3}+$$
$$\frac{g (e f-d g) (d+e x)^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2}}{e^3}+\frac{g^2 (d+e x)^3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2}}{3 e^3}$$

Result (type 8, 28 leaves):

$$\int (f+g x)^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2} dx$$

Problem 112: Unable to integrate problem.

$$\int (f+g x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2} dx$$

Optimal (type 4, 330 leaves, 14 steps):

$$\frac{1}{4 e^2} 3 b^{3/2} e^{-\frac{a}{b n}} (e f - d g) n^{3/2} \sqrt{\pi} (d + e x) \left(c (d + e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] + \frac{1}{16 e^2} 3 b^{3/2} e^{-\frac{2 a}{b n}} g n^{3/2} \sqrt{\frac{\pi}{2}} (d + e x)^2 \left(c (d + e x)^n\right)^{-2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a + b \text{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] - \frac{3 b (e f - d g) n (d + e x) \sqrt{a + b \text{Log}[c (d + e x)^n]}}{2 e^2} - \frac{3 b g n (d + e x)^2 \sqrt{a + b \text{Log}[c (d + e x)^n]}}{8 e^2} + \frac{(e f - d g) (d + e x) (a + b \text{Log}[c (d + e x)^n])^{3/2}}{e^2} + \frac{g (d + e x)^2 (a + b \text{Log}[c (d + e x)^n])^{3/2}}{2 e^2}$$

Result (type 8, 26 leaves):

$$\int (f + g x) (a + b \text{Log}[c (d + e x)^n])^{3/2} \, dx$$

Problem 113: Unable to integrate problem.

$$\int (a + b \text{Log}[c (d + e x)^n])^{3/2} \, dx$$

Optimal (type 4, 143 leaves, 6 steps):

$$\frac{3 b^{3/2} e^{-\frac{a}{b n}} n^{3/2} \sqrt{\pi} (d + e x) \left(c (d + e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}[c (d+e x)^n]}}{\sqrt{b} \sqrt{n}}\right]}{4 e} - \frac{3 b n (d + e x) \sqrt{a + b \text{Log}[c (d + e x)^n]}}{2 e} + \frac{(d + e x) (a + b \text{Log}[c (d + e x)^n])^{3/2}}{e}$$

Result (type 8, 20 leaves):

$$\int (a + b \text{Log}[c (d + e x)^n])^{3/2} \, dx$$

Problem 117: Unable to integrate problem.

$$\int (f + g x)^2 (a + b \text{Log}[c (d + e x)^n])^{5/2} \, dx$$

Optimal (type 4, 660 leaves, 23 steps):

$$-\frac{1}{8 e^3}15 b^{5/2} e^{-\frac{a}{b n}} (e f-d g)^2 n^{5/2} \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]-$$

$$\frac{1}{32 e^3}15 b^{5/2} e^{-\frac{2 a}{b n}} g (e f-d g) n^{5/2} \sqrt{\frac{\pi}{2}} (d+e x)^2$$

$$\left(c (d+e x)^n\right)^{-2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]-\frac{1}{72 e^3}$$

$$5 b^{5/2} e^{-\frac{3 a}{b n}} g^2 n^{5/2} \sqrt{\frac{\pi}{3}} (d+e x)^3 \left(c (d+e x)^n\right)^{-3/n} \text{Erfi}\left[\frac{\sqrt{3} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]+$$

$$\frac{15 b^2 (e f-d g)^2 n^2 (d+e x) \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{4 e^3}+$$

$$\frac{15 b^2 g (e f-d g) n^2 (d+e x)^2 \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{16 e^3}+$$

$$\frac{5 b^2 g^2 n^2 (d+e x)^3 \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{36 e^3}-$$

$$\frac{5 b (e f-d g)^2 n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2}}{2 e^3}-$$

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

$$\frac{5 b g^2 n (d+e x)^3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2}}{18 e^3}+\frac{(e f-d g)^2 (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{5/2}}{e^3}+$$

$$\frac{g (e f-d g) (d+e x)^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{5/2}}{e^3}+\frac{g^2 (d+e x)^3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{5/2}}{3 e^3}$$

Result (type 8, 28 leaves) :

$$\int (f+g x)^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{5/2} dx$$

Problem 118: Unable to integrate problem.

$$\int (f+g x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{5/2} dx$$

Optimal (type 4, 413 leaves, 16 steps) :

$$-\frac{1}{8 e^2} 15 b^{5/2} e^{-\frac{a}{b n}} (e f - d g) n^{5/2} \sqrt{\pi} (d + e x) \left(c (d + e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] - \frac{1}{64 e^2} 15 b^{5/2} e^{-\frac{2 a}{b n}} g n^{5/2} \sqrt{\frac{\pi}{2}} (d + e x)^2 \left(c (d + e x)^n\right)^{-2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a + b \text{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] + \frac{15 b^2 (e f - d g) n^2 (d + e x) \sqrt{a + b \text{Log}[c (d + e x)^n]}}{4 e^2} + \frac{15 b^2 g n^2 (d + e x)^2 \sqrt{a + b \text{Log}[c (d + e x)^n]}}{32 e^2} - \frac{5 b (e f - d g) n (d + e x) (a + b \text{Log}[c (d + e x)^n])^{3/2}}{2 e^2} - \frac{5 b g n (d + e x)^2 (a + b \text{Log}[c (d + e x)^n])^{3/2}}{8 e^2} + \frac{(e f - d g) (d + e x) (a + b \text{Log}[c (d + e x)^n])^{5/2}}{e^2} + \frac{g (d + e x)^2 (a + b \text{Log}[c (d + e x)^n])^{5/2}}{2 e^2}$$

Result (type 8, 26 leaves):

$$\int (f + g x) (a + b \text{Log}[c (d + e x)^n])^{5/2} \, dx$$

Problem 119: Unable to integrate problem.

$$\int (a + b \text{Log}[c (d + e x)^n])^{5/2} \, dx$$

Optimal (type 4, 179 leaves, 7 steps):

$$-\frac{1}{8 e} 15 b^{5/2} e^{-\frac{a}{b n}} n^{5/2} \sqrt{\pi} (d + e x) \left(c (d + e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] + \frac{15 b^2 n^2 (d + e x) \sqrt{a + b \text{Log}[c (d + e x)^n]}}{4 e} - \frac{5 b n (d + e x) (a + b \text{Log}[c (d + e x)^n])^{3/2}}{2 e} + \frac{(d + e x) (a + b \text{Log}[c (d + e x)^n])^{5/2}}{e}$$

Result (type 8, 20 leaves):

$$\int (a + b \text{Log}[c (d + e x)^n])^{5/2} \, dx$$

Problem 123: Result more than twice size of optimal antiderivative.

$$\int \frac{(f + g x)^3}{\sqrt{a + b \text{Log}[c (d + e x)^n]}} \, dx$$

Optimal (type 4, 383 leaves, 18 steps):

$$\frac{1}{\sqrt{b}\, e^4 \sqrt{n}} e^{-\frac{a}{b n}} (e f - d g)^3 \sqrt{\pi}\, (d + e x) \left(c (d + e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}\left[c (d + e x)^n\right]}}{\sqrt{b}\, \sqrt{n}}\right] +$$

$$\frac{e^{-\frac{4 a}{b n}} g^3 \sqrt{\pi}\, (d + e x)^4 \left(c (d + e x)^n\right)^{-4/n} \text{Erfi}\left[\frac{2 \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b}\, \sqrt{n}}\right]}{2 \sqrt{b}\, e^4 \sqrt{n}} + \frac{1}{\sqrt{b}\, e^4 \sqrt{n}}$$

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

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

Result (type 4, 1485 leaves):

$$\left(e^{-\frac{a+b \left(-n \text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)}{b n}} f^3 \sqrt{\pi}\, \text{Erfi}\left[\frac{\sqrt{a + b n \text{Log}[d + e x] + b \left(-n \text{Log}[d + e x] + \text{Log}\left[c (d + e x)^n\right]\right)}}{\sqrt{b}\, \sqrt{n}}\right] \right.$$

$$\left. \sqrt{a + b \text{Log}\left[c (d + e x)^n\right]}\right) \Big/$$

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

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

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

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

$$\left.\sqrt{a + b \text{Log}\left[c (d + e x)^n\right]}\right) \Big/$$

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

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

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

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

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

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

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

$$\sqrt{3}\ \text{Erf}\left[\sqrt{3}\ \sqrt{\left(-\frac{1}{b\,n}\left(a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)\right)}\right]\Bigg)\Bigg/$$

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

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

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

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

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

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

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

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

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

$$\text{Erf}\left[\sqrt{3}\ \sqrt{\left(-\frac{1}{b\,n}\left(a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)\right)}\right]\Bigg)\Bigg/$$

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

Problem 124: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 283 leaves, 14 steps):

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

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

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

Result (type 4, 573 leaves):

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

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

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

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

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

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

$$\left.\sqrt{3}\,\text{Erf}\left[\sqrt{3}\,\sqrt{-\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{b\,n}}\right]\right)$$

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

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

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

Optimal (type 4, 422 leaves, 33 steps):

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

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

$$6 e^{-\frac{2 a}{b n}} g (e f - d g)^2 \sqrt{2 \pi} (d + e x)^2 \left(c (d + e x)^n\right)^{-2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a + b \text{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] +$$

$$\frac{1}{b^{3/2} e^4 n^{3/2}} 6 e^{-\frac{3 a}{b n}} g^2 (e f - d g) \sqrt{3 \pi} (d + e x)^3 \left(c (d + e x)^n\right)^{-3/n}$$

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

Result (type 4, 2217 leaves):

$$\frac{1}{b^{3/2} e^4 n^{3/2} \sqrt{a + b \text{Log}[c (d + e x)^n]}}$$

$$2 e^{-\frac{4 a}{b n}} \left(c (d + e x)^n\right)^{-4/n} \Bigg(-\sqrt{b} d e^3 e^{\frac{4 a}{b n}} f^3 \sqrt{n} \left(c (d + e x)^n\right)^{4/n} - \sqrt{b} e^4 e^{\frac{4 a}{b n}} f^3 \sqrt{n} x \left(c (d + e x)^n\right)^{4/n} -$$

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

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

$$\sqrt{b} d e^3 e^{\frac{4 a}{b n}} g^3 \sqrt{n} x^3 \left(c (d + e x)^n\right)^{4/n} - \sqrt{b} e^4 e^{\frac{4 a}{b n}} g^3 \sqrt{n} x^4 \left(c (d + e x)^n\right)^{4/n} + e^3 e^{\frac{3 a}{b n}} f^3 \sqrt{\pi}$$

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

$$3 d e^2 e^{\frac{3 a}{b n}} f^2 g \sqrt{\pi} (d + e x) \left(c (d + e x)^n\right)^{3/n} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right]$$

$$\sqrt{a + b \text{Log}[c (d + e x)^n]} - 6 d^2 e e^{\frac{3 a}{b n}} f g^2 \sqrt{\pi} (d + e x) \left(c (d + e x)^n\right)^{3/n}$$

$$\text{Erfi}\left[\frac{\sqrt{a + b \text{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] \sqrt{a + b \text{Log}[c (d + e x)^n]} + 3 e^2 e^{\frac{2 a}{b n}} f^2 g \sqrt{2 \pi} (d + e x)^2$$

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

$$3 d e e^{\frac{2 a}{b n}} f g^2 \sqrt{2 \pi} (d + e x)^2 \left(c (d + e x)^n\right)^{2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a + b \text{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right]$$

$$\sqrt{a + b \text{Log}[c (d + e x)^n]} + 2 \sqrt{b} g^3 \sqrt{n} \sqrt{\pi} (d + e x)^4 \sqrt{-\frac{a + b \text{Log}[c (d + e x)^n]}{b n}} +$$

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

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

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

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

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

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

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

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

$$\operatorname{Erf}\left[\sqrt{-\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{b n}}\right] \sqrt{-\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{b n}} -$$

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

$$9 \sqrt{b}\ d\, e\, e^{\frac{2 a}{b n}} f g^2 \sqrt{n} \sqrt{2 \pi} (d+e x)^2 \left(c (d+e x)^n\right)^{2/n} \operatorname{Erf}\left[\sqrt{2} \sqrt{-\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{b n}}\right]$$

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

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

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

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

$$\text{Erf}\left[\sqrt{3}\,\sqrt{-\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{b\,n}}\right]\sqrt{-\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{b\,n}}\Bigg)$$

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

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

Optimal (type 4, 325 leaves, 25 steps):

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

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

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

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

Result (type 4, 1319 leaves):

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

$$2\,e^{-\frac{3\,a}{b\,n}}\,\left(c\,(d+e\,x)^n\right)^{-3/n}\,\Bigg(-\sqrt{b}\,d\,e^2\,e^{\frac{3\,a}{b\,n}}\,f^2\,\sqrt{n}\,\left(c\,(d+e\,x)^n\right)^{3/n}-\sqrt{b}\,e^3\,e^{\frac{3\,a}{b\,n}}\,f^2\,\sqrt{n}\,x\,\left(c\,(d+e\,x)^n\right)^{3/n}-$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\left.\sqrt{b}\,g^2\,\sqrt{n}\,\sqrt{3\,\pi}\,(d+e\,x)^3\,\text{Erf}\left[\sqrt{3}\,\sqrt{-\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{b\,n}}\right]\sqrt{-\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{b\,n}}\right)$$

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

$$\int\frac{(f+g\,x)^3}{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{5/2}}\,dx$$

Optimal (type 4, 520 leaves, 59 steps):

$$\frac{1}{3 b^{5/2} e^4 n^{5/2}} 4 e^{-\frac{a}{b n}} (e f - d g)^3 \sqrt{\pi} (d + e x) \left(c (d + e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] +$$

$$\frac{32 e^{-\frac{4 a}{b n}} g^3 \sqrt{\pi} (d + e x)^4 \left(c (d + e x)^n\right)^{-4/n} \text{Erfi}\left[\frac{2 \sqrt{a + b \text{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right]}{3 b^{5/2} e^4 n^{5/2}} + \frac{1}{b^{5/2} e^4 n^{5/2}}$$

$$8 e^{-\frac{2 a}{b n}} g (e f - d g)^2 \sqrt{2 \pi} (d + e x)^2 \left(c (d + e x)^n\right)^{-2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a + b \text{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] +$$

$$\frac{1}{b^{5/2} e^4 n^{5/2}} 12 e^{-\frac{3 a}{b n}} g^2 (e f - d g) \sqrt{3 \pi} (d + e x)^3 \left(c (d + e x)^n\right)^{-3/n}$$

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

$$\frac{4 (e f - d g) (d + e x) (f + g x)^2}{b^2 e^2 n^2 \sqrt{a + b \text{Log}[c (d + e x)^n]}} - \frac{16 (d + e x) (f + g x)^3}{3 b^2 e n^2 \sqrt{a + b \text{Log}[c (d + e x)^n]}}$$

Result (type 4, 2997 leaves):

$$\left(4 e^{-\frac{a+b \left(-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n]\right)}{b n}} f^3 \sqrt{\pi} \text{Erfi}\left[\frac{\sqrt{a + b n \text{Log}[d + e x] + b \left(-n \text{Log}[d + e x] + \text{Log}[c (d + e x)^n]\right)}}{\sqrt{b} \sqrt{n}}\right]\right.$$

$$\left.\sqrt{a + b \text{Log}[c (d + e x)^n]}\right) \Big/$$

$$\left(3 b^{5/2} e n^{5/2} \sqrt{a + b n \text{Log}[d + e x] + b \left(-n \text{Log}[d + e x] + \text{Log}[c (d + e x)^n]\right)}\right) +$$

$$\left(12 d e^{-\frac{a+b \left(-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n]\right)}{b n}} f^2 g \sqrt{\pi} \text{Erfi}\left[\right.\right.$$

$$\left.\left.\frac{\sqrt{a + b n \text{Log}[d + e x] + b \left(-n \text{Log}[d + e x] + \text{Log}[c (d + e x)^n]\right)}}{\sqrt{b} \sqrt{n}}\right] \sqrt{a + b \text{Log}[c (d + e x)^n]}\right) \Big/$$

$$\left(b^{5/2} e^2 n^{5/2} \sqrt{a + b n \text{Log}[d + e x] + b \left(-n \text{Log}[d + e x] + \text{Log}[c (d + e x)^n]\right)}\right) +$$

$$\left(8 d^2 e^{-\frac{a+b \left(-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n]\right)}{b n}} f g^2 \sqrt{\pi} \text{Erfi}\left[\right.\right.$$

$$\left.\left.\frac{\sqrt{a + b n \text{Log}[d + e x] + b \left(-n \text{Log}[d + e x] + \text{Log}[c (d + e x)^n]\right)}}{\sqrt{b} \sqrt{n}}\right] \sqrt{a + b \text{Log}[c (d + e x)^n]}\right) \Big/$$

$$\left(b^{5/2} e^3 n^{5/2} \sqrt{a + b n \text{Log}[d + e x] + b \left(-n \text{Log}[d + e x] + \text{Log}[c (d + e x)^n]\right)}\right) +$$

$$\left(8 e^{-\frac{2 \left(a+b \left(-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n]\right)\right)}{b n}} f^2 g \sqrt{\pi} \left(-2 d e^{\frac{a+b \left(-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n]\right)}{b n}}\right.\right.$$

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

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

$$\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}\ \Bigg)\Bigg/$$

$$\left(b^{5/2}\,e^2\,n^{5/2}\sqrt{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}\right)+$$

$$\Bigg(20\,d\,e^{-\frac{2\left(a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}{b\,n}}\,f\,g^2\sqrt{\pi}\ \Bigg(-2\,d\,e^{\frac{a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}$$

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

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

$$\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}\ \Bigg)\Bigg/$$

$$\left(b^{5/2}\,e^3\,n^{5/2}\sqrt{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}\right)+$$

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

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

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

$$\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}\ \Bigg)\Bigg/$$

$$\left(b^{5/2}\,e^4\,n^{5/2}\sqrt{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}\right)+$$

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

$$12\,e^{-\frac{3\left(a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}{b\,n}}\,f\,g^2\sqrt{\pi}$$

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

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

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

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

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

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

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

$$28\,d\,e^{-\frac{3\left(a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}{b\,n}}\,g^3\,\sqrt{\pi}$$

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

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

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

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

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

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

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

$$32\,e^{-\frac{4\left(a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}{b\,n}}\,g^3\,\sqrt{\pi}\,\left(-1+2\,\sqrt{3}\,d\,e^{\frac{a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}-\right.$$

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

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

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

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

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

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

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

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

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

$$\left(-\left(\left(2\,(d+e\,x)\,(f+g\,x)^3\right)\Big/\right.\right.$$

$$\left.\left(3\,b\,e\,n\,\left(a+b\,n\,\text{Log}[d+e\,x]+b\,\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)^2\right)\right)-$$

$$\left(4\,(d+e\,x)\,(f+g\,x)^2\,(e\,f+3\,d\,g+4\,e\,g\,x)\right)\Big/$$

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

Problem 134: Result more than twice size of optimal antiderivative.

$$\int \frac{(f + g x)^2}{\left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right)^{5/2}} \, dx$$

Optimal (type 4, 421 leaves, 41 steps):

$$\frac{1}{3 b^{5/2} e^3 n^{5/2}} 4 e^{-\frac{a}{b n}} (e f - d g)^2 \sqrt{\pi} (d + e x) \left(c (d + e x)^n\right)^{-1/n} \operatorname{Erfi}\left[\frac{\sqrt{a + b \operatorname{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] + \frac{1}{3 b^{5/2} e^3 n^{5/2}} 16 e^{-\frac{2a}{b n}} g (e f - d g) \sqrt{2\pi} (d + e x)^2 \left(c (d + e x)^n\right)^{-2/n} \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{a + b \operatorname{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] + \frac{4 e^{-\frac{3a}{b n}} g^2 \sqrt{3\pi} (d + e x)^3 \left(c (d + e x)^n\right)^{-3/n} \operatorname{Erfi}\left[\frac{\sqrt{3} \sqrt{a + b \operatorname{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right]}{b^{5/2} e^3 n^{5/2}} - \frac{2 (d + e x) (f + g x)^2}{3 b e n \left(a + b \operatorname{Log}[c (d + e x)^n]\right)^{3/2}} + \frac{8 (e f - d g) (d + e x) (f + g x)}{3 b^2 e^2 n^2 \sqrt{a + b \operatorname{Log}[c (d + e x)^n]}} - \frac{4 (d + e x) (f + g x)^2}{b^2 e n^2 \sqrt{a + b \operatorname{Log}[c (d + e x)^n]}}$$

Result (type 4, 951 leaves):

$$\frac{1}{3 b^{5/2} e^3 n^{5/2}} 2 (d + e x) \left(2 e^2 e^{-\frac{a}{b n}} f^2 \sqrt{\pi} \left(c (d + e x)^n\right)^{-1/n} \operatorname{Erfi}\left[\frac{\sqrt{a + b \operatorname{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] + 12 d e e^{-\frac{a}{b n}} f g \sqrt{\pi} \left(c (d + e x)^n\right)^{-1/n} \operatorname{Erfi}\left[\frac{\sqrt{a + b \operatorname{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] + 4 d^2 e^{-\frac{a}{b n}} g^2 \sqrt{\pi} \left(c (d + e x)^n\right)^{-1/n} \operatorname{Erfi}\left[\frac{\sqrt{a + b \operatorname{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] - 10 d e^{-\frac{2a}{b n}} g^2 \sqrt{\pi} \left(c (d + e x)^n\right)^{-2/n} \left(2 d e^{\frac{a}{b n}} \left(c (d + e x)^n\right)^{\frac{1}{n}} \operatorname{Erfi}\left[\frac{\sqrt{a + b \operatorname{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right] - \sqrt{2} (d + e x) \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{a + b \operatorname{Log}[c (d + e x)^n]}}{\sqrt{b} \sqrt{n}}\right]\right) + \right.$$

$$8\,e\,e^{-\frac{2a}{b n}} f g \sqrt{\pi}\,\left(c\,(d+e x)^n\right)^{-2/n} \left(-2\,d\,e^{\frac{a}{b n}} \left(c\,(d+e x)^n\right)^{\frac{1}{n}} \text{Erfi}\left[\frac{\sqrt{a+b\,\text{Log}\left[c\,(d+e x)^n\right]}}{\sqrt{b}\,\sqrt{n}}\right] + \sqrt{2}\,(d+e x)\,\text{Erfi}\left[\frac{\sqrt{2}\,\sqrt{a+b\,\text{Log}\left[c\,(d+e x)^n\right]}}{\sqrt{b}\,\sqrt{n}}\right]\right) +$$

$$\left(6\sqrt{b}\,e^{-\frac{3a}{b n}} g^2 \sqrt{n}\,\sqrt{\pi}\,(d+e x)^2 \left(c\,(d+e x)^n\right)^{-3/n} \left(\sqrt{3} - \frac{3\sqrt{2}\,d\,e^{\frac{a}{b n}} \left(c\,(d+e x)^n\right)^{\frac{1}{n}}}{d+e x} + \frac{3\,d^2\,e^{\frac{2a}{b n}} \left(c\,(d+e x)^n\right)^{2/n}}{(d+e x)^2} - \frac{3\,d^2\,e^{\frac{2a}{b n}} \left(c\,(d+e x)^n\right)^{2/n} \text{Erf}\left[\sqrt{-\frac{a+b\,\text{Log}\left[c\,(d+e x)^n\right]}{b n}}\right]}{(d+e x)^2} + \frac{3\sqrt{2}\,d\,e^{\frac{a}{b n}} \left(c\,(d+e x)^n\right)^{\frac{1}{n}} \text{Erf}\left[\sqrt{2}\,\sqrt{-\frac{a+b\,\text{Log}\left[c\,(d+e x)^n\right]}{b n}}\right]}{d+e x} - \sqrt{3}\,\text{Erf}\left[\sqrt{3}\,\sqrt{-\frac{a+b\,\text{Log}\left[c\,(d+e x)^n\right]}{b n}}\right]\right) \sqrt{-\frac{a+b\,\text{Log}\left[c\,(d+e x)^n\right]}{b n}}\right) \Big/ \left(\sqrt{a+b\,\text{Log}\left[c\,(d+e x)^n\right]}\right) - \left(\sqrt{b}\,e\,\sqrt{n}\,(f+g x)\,\left(b\,e\,n\,(f+g x) + 2\,a\,(e f+2 d g+3 e g x) + 2\,b\,(2 d g+e\,(f+3 g x))\,\text{Log}\left[c\,(d+e x)^n\right]\right)\right) \Big/ \left(a+b\,\text{Log}\left[c\,(d+e x)^n\right]\right)^{3/2}\right)$$

Problem 145: Result unnecessarily involves higher level functions.

$$\int (f+g x)^{3/2} \left(a+b\,\text{Log}\left[c\,(d+e x)^n\right]\right)^2 dx$$

Optimal (type 4, 590 leaves, 28 steps):

$$\frac{368\,b^2\,(e\,f-d\,g)^2\,n^2\,\sqrt{f+g\,x}}{75\,e^2\,g}+\frac{128\,b^2\,(e\,f-d\,g)\,n^2\,(f+g\,x)^{3/2}}{225\,e\,g}+$$

$$\frac{16\,b^2\,n^2\,(f+g\,x)^{5/2}}{125\,g}-\frac{368\,b^2\,(e\,f-d\,g)^{5/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]}{75\,e^{5/2}\,g}-$$

$$\frac{8\,b^2\,(e\,f-d\,g)^{5/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]^2}{5\,e^{5/2}\,g}-\frac{8\,b\,(e\,f-d\,g)^2\,n\,\sqrt{f+g\,x}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{5\,e^2\,g}-$$

$$\frac{8\,b\,(e\,f-d\,g)\,n\,(f+g\,x)^{3/2}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{15\,e\,g}-\frac{8\,b\,n\,(f+g\,x)^{5/2}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{25\,g}+$$

$$\frac{8\,b\,(e\,f-d\,g)^{5/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{5\,e^{5/2}\,g}+$$

$$\frac{2\,(f+g\,x)^{5/2}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{5\,g}+$$

$$\frac{16\,b^2\,(e\,f-d\,g)^{5/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{5\,e^{5/2}\,g}+$$

$$\frac{8\,b^2\,(e\,f-d\,g)^{5/2}\,n^2\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{5\,e^{5/2}\,g}$$

Result (type 5, 1143 leaves):

$$\frac{1}{225\,g}\,2\left(\frac{1}{e^2\,\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}}\,15\,b^2\,n^2\,\sqrt{f+g\,x}\right.$$

$$\left(10\,g\,(-e\,f+d\,g)\,(d+e\,x)\,\text{HypergeometricPFQ}\left[\left\{-\frac{3}{2},\,1,\,1,\,1\right\},\,\{2,\,2,\,2\},\,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-\right.$$

$$15\,d^2\,g^2\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},\,1,\,1,\,1\right\},\,\{2,\,2,\,2\},\,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-15\,d\,e\,g^2\,x$$

$$\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},\,1,\,1,\,1\right\},\,\{2,\,2,\,2\},\,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]+4\,e^2\,f^2\,\text{Log}[d+e\,x]-$$

$$8\,d\,e\,f\,g\,\text{Log}[d+e\,x]+4\,d^2\,g^2\,\text{Log}[d+e\,x]-4\,e^2\,f^2\,\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}\,\text{Log}[d+e\,x]-$$

$$8 e^2 f g x \sqrt{\frac{e (f+g x)}{e f-d g}} \operatorname{Log}[d+e x]-4 e^2 g^2 x^2 \sqrt{\frac{e (f+g x)}{e f-d g}} \operatorname{Log}[d+e x]+$$

$$15 d^2 g^2 \operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{g (d+e x)}{-e f+d g}\right] \operatorname{Log}[d+e x]+$$

$$15 d e g^2 x \operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{g (d+e x)}{-e f+d g}\right] \operatorname{Log}[d+e x]+$$

$$2 e^2 f^2 \operatorname{Log}[d+e x]^2+d e f g \operatorname{Log}[d+e x]^2-3 d^2 g^2 \operatorname{Log}[d+e x]^2-$$

$$2 e^2 f^2 \sqrt{\frac{e (f+g x)}{e f-d g}} \operatorname{Log}[d+e x]^2+e^2 f g x \sqrt{\frac{e (f+g x)}{e f-d g}} \operatorname{Log}[d+e x]^2+$$

$$3 e^2 g^2 x^2 \sqrt{\frac{e (f+g x)}{e f-d g}} \operatorname{Log}[d+e x]^2-10 g (-e f+d g) (d+e x)$$

$$\left.\operatorname{HypergeometricPFQ}\left[\left\{-\frac{3}{2},1,1\right\},\{2,2\},\frac{g (d+e x)}{-e f+d g}\right] (1+\operatorname{Log}[d+e x])\right)+\frac{1}{e \sqrt{\frac{e (f+g x)}{e f-d g}}}$$

$$75 b^2 f n^2 \sqrt{f+g x} \left(3 g (d+e x) \operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1,1\right\},\{2,2,2\},\frac{g (d+e x)}{-e f+d g}\right]+\right.$$

$$\operatorname{Log}[d+e x] \left(-3 g (d+e x) \operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{g (d+e x)}{-e f+d g}\right]+\right.$$

$$\left.\left.\left(d g+e g x \sqrt{\frac{e (f+g x)}{e f-d g}}+e f \left(-1+\sqrt{\frac{e (f+g x)}{e f-d g}}\right)\right) \operatorname{Log}[d+e x]\right)\right)-$$

$$\frac{1}{e^{3/2}} 50 b f n \left(6 (e f-d g)^{3/2} \operatorname{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]+\sqrt{e} \sqrt{f+g x}\right.$$

$$\left.(6 d g-2 e (4 f+g x)+3 e (f+g x) \operatorname{Log}[d+e x])\right)$$

$$\left(-a+b n \operatorname{Log}[d+e x]-b \operatorname{Log}\left[c (d+e x)^n\right]\right)+\frac{1}{e^{5/2}}$$

$$2 b n \left(30 \sqrt{e f-d g} \left(2 e^2 f^2+d e f g-3 d^2 g^2\right) \operatorname{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]+\right.$$

$$\sqrt{e} \sqrt{f+g x} \left(90 d^2 g^2-30 d e g (2 f+g x)+\right.$$

$$\left.\left.2 e^2 \left(-31 f^2+8 f g x+9 g^2 x^2\right)+15 e^2 \left(2 f^2-f g x-3 g^2 x^2\right) \operatorname{Log}[d+e x]\right)\right)$$

$$\left(-a+b n \operatorname{Log}[d+e x]-b \operatorname{Log}\left[c (d+e x)^n\right]\right)+45 (f+g x)^{5/2}$$

$$\left.\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\right)$$

Problem 146: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 510 leaves, 21 steps):

$$\frac{64\,b^2\,(e\,f-d\,g)\,n^2\,\sqrt{f+g\,x}}{9\,e\,g}+\frac{16\,b^2\,n^2\,(f+g\,x)^{3/2}}{27\,g}-\frac{64\,b^2\,(e\,f-d\,g)^{3/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]}{9\,e^{3/2}\,g}-\frac{8\,b^2\,(e\,f-d\,g)^{3/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]^2}{3\,e^{3/2}\,g}-$$

$$\frac{8\,b\,(e\,f-d\,g)\,n\,\sqrt{f+g\,x}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{3\,e\,g}-\frac{8\,b\,n\,(f+g\,x)^{3/2}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{9\,g}+$$

$$\frac{8\,b\,(e\,f-d\,g)^{3/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{3\,e^{3/2}\,g}+$$

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

$$\frac{16\,b^2\,(e\,f-d\,g)^{3/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{3\,e^{3/2}\,g}+$$

$$\frac{8\,b^2\,(e\,f-d\,g)^{3/2}\,n^2\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{3\,e^{3/2}\,g}$$

Result (type 5, 351 leaves):

$$\frac{1}{9 g} 2 \left(\frac{1}{e \sqrt{\frac{e (f+g x)}{e f-d g}}} 3 b^2 n^2 \sqrt{f+g x} \left(3 g (d+e x) \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2}, 1, 1, 1\right\}, \{2, 2, 2\}, \frac{g (d+e x)}{-e f+d g}\right] + \text{Log}[d+e x] \left(-3 g (d+e x) \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2}, 1, 1\right\}, \{2, 2\}, \frac{g (d+e x)}{-e f+d g}\right] + \left(d g + e g x \sqrt{\frac{e (f+g x)}{e f-d g}} + e f \left(-1+\sqrt{\frac{e (f+g x)}{e f-d g}}\right)\right) \text{Log}[d+e x]\right)\right) - \frac{1}{e^{3/2}} 2 b n \left(6 (e f-d g)^{3/2} \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] + \sqrt{e} \sqrt{f+g x} \left(6 d g - 2 e (4 f+g x) + 3 e (f+g x) \text{Log}[d+e x]\right)\right) \left(-a + b n \text{Log}[d+e x] - b \text{Log}\left[c (d+e x)^n\right]\right) + 3 (f+g x)^{3/2} \left(a - b n \text{Log}[d+e x] + b \text{Log}\left[c (d+e x)^n\right]\right)^2 \right)$$

Problem 147: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 418 leaves, 15 steps):

$$\frac{16 b^2 n^2 \sqrt{f+g x}}{g}-\frac{16 b^2 \sqrt{e f-d g}\, n^2 \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]}{\sqrt{e}\, g}-$$

$$\frac{8 b^2 \sqrt{e f-d g}\, n^2 \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]^2}{\sqrt{e}\, g}-\frac{8 b n \sqrt{f+g x} \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{g}+$$

$$\frac{8 b \sqrt{e f-d g}\, n \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{\sqrt{e}\, g}+$$

$$\frac{2 \sqrt{f+g x} \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{g}+\frac{16 b^2 \sqrt{e f-d g}\, n^2 \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \text{Log}\left[\frac{2}{1-\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{\sqrt{e}\, g}+$$

$$\frac{8 b^2 \sqrt{e f-d g}\, n^2 \text{PolyLog}\left[2, 1-\frac{2}{1-\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{\sqrt{e}\, g}$$

Result (type 5, 301 leaves):

$$\frac{1}{e g \sqrt{f+g x}}$$

$$2 \left(b^2 n^2 \sqrt{\frac{e (f+g x)}{e f-d g}} \left(g (d+e x) \text{HypergeometricPFQ}\left[\left\{\frac{1}{2}, 1, 1, 1\right\}, \{2, 2, 2\}, \frac{g (d+e x)}{-e f+d g}\right]-\right.\right.$$

$$g (d+e x) \text{HypergeometricPFQ}\left[\left\{\frac{1}{2}, 1, 1\right\}, \{2, 2\}, \frac{g (d+e x)}{-e f+d g}\right] \text{Log}[d+e x]+$$

$$\left.(e f-d g) \left(-1+\sqrt{\frac{e (f+g x)}{e f-d g}}\right) \text{Log}[d+e x]^2\right)+$$

$$2 b n \sqrt{f+g x} \left(2 \sqrt{e} \sqrt{e f-d g}\, \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]+e \sqrt{f+g x} \left(-2+\text{Log}[d+e x]\right)\right)$$

$$\left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)+$$

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

Problem 148: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 312 leaves, 10 steps):

$$\frac{8\,b^2\sqrt{e}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]^2}{g\sqrt{e\,f-d\,g}}-\frac{8\,b\sqrt{e}\,n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{g\sqrt{e\,f-d\,g}}-\frac{2\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{g\sqrt{f+g\,x}}-\frac{16\,b^2\sqrt{e}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\text{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{g\sqrt{e\,f-d\,g}}-\frac{8\,b^2\sqrt{e}\,n^2\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{g\sqrt{e\,f-d\,g}}$$

Result (type 5, 342 leaves):

$$\frac{1}{g}2\left(\left(2\,b\,n\left(2\sqrt{e}\,(f+g\,x)\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]+\sqrt{e\,f-d\,g}\,\sqrt{f+g\,x}\,\text{Log}[d+e\,x]\right)\left(-a+b\,n\,\text{Log}[d+e\,x]-b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)\Big/\left(\sqrt{e\,f-d\,g}\,(f+g\,x)\right)-\frac{\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{\sqrt{f+g\,x}}+\left(b^2\,n^2\left(g\,(d+e\,x)\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}\,\text{HypergeometricPFQ}\left[\left\{1,1,1,\frac{3}{2}\right\},\{2,2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]+(e\,f-d\,g)\,\text{Log}[d+e\,x]\left(\left(-1+\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}\right)\text{Log}[d+e\,x]-4\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}\,\text{Log}\left[\frac{1}{2}\left(1+\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}\right)\right]\right)\right)\right)\Big/\left((e\,f-d\,g)\sqrt{f+g\,x}\right)\right)$$

Problem 149: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{(f+g\,x)^{5/2}}\,dx$$

Optimal (type 4, 423 leaves, 14 steps):

$$\frac{16\,b^2\,e^{3/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]}{3\,g\,\left(e\,f-d\,g\right)^{3/2}}+\frac{8\,b^2\,e^{3/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]^2}{3\,g\,\left(e\,f-d\,g\right)^{3/2}}+\frac{8\,b\,e\,n\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)}{3\,g\,\left(e\,f-d\,g\right)\,\sqrt{f+g\,x}}-\frac{8\,b\,e^{3/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)}{3\,g\,\left(e\,f-d\,g\right)^{3/2}}-\frac{2\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)^2}{3\,g\,\left(f+g\,x\right)^{3/2}}-\frac{16\,b^2\,e^{3/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{3\,g\,\left(e\,f-d\,g\right)^{3/2}}-\frac{8\,b^2\,e^{3/2}\,n^2\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{3\,g\,\left(e\,f-d\,g\right)^{3/2}}$$

Result (type 5, 419 leaves):

$$\frac{1}{3\,g\,\left(e\,f-d\,g\right)^2\,\left(f+g\,x\right)^{3/2}}2\,\left(-2\,b\,\sqrt{e\,f-d\,g}\,n\,\left(2\,e^{3/2}\,\left(f+g\,x\right)^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]-\sqrt{e\,f-d\,g}\,\left(2\,e\,\left(f+g\,x\right)+\left(-e\,f+d\,g\right)\,\text{Log}\left[d+e\,x\right]\right)\right)\,\left(a-b\,n\,\text{Log}\left[d+e\,x\right]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)-\left(e\,f-d\,g\right)^2\,\left(a-b\,n\,\text{Log}\left[d+e\,x\right]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)^2+b^2\,n^2\,\left(3\,e\,g\,\left(d+e\,x\right)\,\left(f+g\,x\right)\,\sqrt{\frac{e\,\left(f+g\,x\right)}{e\,f-d\,g}}\,\text{HypergeometricPFQ}\left[\left\{1,1,1,\frac{5}{2}\right\},\{2,2,2\},\frac{g\,\left(d+e\,x\right)}{-e\,f+d\,g}\right]+\left(e\,f-d\,g\right)\,\text{Log}\left[d+e\,x\right]\,\left(\left(d\,g+e\,g\,x\,\sqrt{\frac{e\,\left(f+g\,x\right)}{e\,f-d\,g}}+e\,f\,\left(-1+\sqrt{\frac{e\,\left(f+g\,x\right)}{e\,f-d\,g}}\right)\right)\,\text{Log}\left[d+e\,x\right]-4\,e\,\left(f+g\,x\right)\,\left(-1+\sqrt{\frac{e\,\left(f+g\,x\right)}{e\,f-d\,g}}+\sqrt{\frac{e\,\left(f+g\,x\right)}{e\,f-d\,g}}\,\text{Log}\left[\frac{1}{2}\,\left(1+\sqrt{\frac{e\,\left(f+g\,x\right)}{e\,f-d\,g}}\right)\right]\right)\right)\right)\right)$$

Problem 150: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)^2}{\left(f+g\,x\right)^{7/2}}\,dx$$

Optimal (type 4, 503 leaves, 19 steps):

$$-\frac{16 b^2 e^2 n^2}{15 g (e f-d g)^2 \sqrt{f+g x}}+\frac{64 b^2 e^{5/2} n^2 \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]}{15 g (e f-d g)^{5/2}}+\frac{8 b^2 e^{5/2} n^2 \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]^2}{5 g (e f-d g)^{5/2}}+$$
$$\frac{8 b e n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{15 g (e f-d g) (f+g x)^{3/2}}+\frac{8 b e^2 n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{5 g (e f-d g)^2 \sqrt{f+g x}}-$$
$$\frac{8 b e^{5/2} n \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{5 g (e f-d g)^{5/2}}-\frac{2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{5 g (f+g x)^{5/2}}-$$
$$\frac{16 b^2 e^{5/2} n^2 \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \text{Log}\left[\frac{2}{1-\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{5 g (e f-d g)^{5/2}}-\frac{8 b^2 e^{5/2} n^2 \text{PolyLog}\left[2, 1-\frac{2}{1-\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{5 g (e f-d g)^{5/2}}$$

Result (type 5, 705 leaves):

$$\frac{1}{5\,g\,(e\,f-d\,g)^3\,(e\,f+e\,g\,x)^2\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e}}}$$

$$2\,b^2\,e^2\,n^2\,\Bigg(5\,g\,(d+e\,x)\,(e\,f+e\,g\,x)^2\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}$$

$$\text{HypergeometricPFQ}\Big[\Big\{1,1,1,\frac{7}{2}\Big\},\{2,2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\Big]-5\,g\,(d+e\,x)\,(e\,f+e\,g\,x)^2$$

$$\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\;\text{HypergeometricPFQ}\Big[\Big\{1,1,\frac{7}{2}\Big\},\{2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\Big]\,\text{Log}[d+e\,x]+$$

$$(e\,f-d\,g)\,\Bigg(e^2\,f^2\,\Bigg(-1+\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\Bigg)-$$

$$2\,e\,f\,g\,\Bigg(-(d+e\,x)\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}+d\,\Bigg(-1+\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\Bigg)\Bigg)+$$

$$g^2\,\Bigg(-2\,d\,(d+e\,x)\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}+(d+e\,x)^2\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}+$$

$$d^2\,\Bigg(-1+\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\Bigg)\Bigg)\Bigg)\,\text{Log}[d+e\,x]^2\Bigg)+$$

$$\frac{1}{15\,g}4\,b\,e^{5/2}\,n\,\Bigg(-\frac{6\,\text{ArcTanh}\Big[\frac{\sqrt{e}\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e}}}{\sqrt{e\,f-d\,g}}\Big]}{(e\,f-d\,g)^{5/2}}+\Bigg(\sqrt{e}\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e}}$$

$$\Big(2\,(e\,f-d\,g)\,(e\,f+e\,g\,x)+6\,(e\,f+e\,g\,x)^2-3\,(e\,f-d\,g)^2\,\text{Log}[d+e\,x]\Big)\Bigg)\Bigg/$$

$$\Big((e\,f-d\,g)^2\,(e\,f+e\,g\,x)^3\Big)\Bigg)\,\Big(a+b\,\big(-n\,\text{Log}[d+e\,x]+\text{Log}\big[c\,(d+e\,x)^n\big]\big)\Big)-$$

$$\frac{2\,\big(a+b\,\big(-n\,\text{Log}[d+e\,x]+\text{Log}\big[c\,(d+e\,x)^n\big]\big)\big)^2}{5\,g\,(f+g\,x)^{5/2}}$$

Problem 151: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{(f+g\,x)^{9/2}}\,dx$$

Optimal (type 4, 583 leaves, 25 steps):

$$-\frac{16\,b^2\,e^2\,n^2}{105\,g\,(e\,f-d\,g)^2\,(f+g\,x)^{3/2}}-\frac{128\,b^2\,e^3\,n^2}{105\,g\,(e\,f-d\,g)^3\,\sqrt{f+g\,x}}+\frac{368\,b^2\,e^{7/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]}{105\,g\,(e\,f-d\,g)^{7/2}}+\frac{8\,b^2\,e^{7/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]^2}{7\,g\,(e\,f-d\,g)^{7/2}}+\frac{8\,b\,e\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{35\,g\,(e\,f-d\,g)\,(f+g\,x)^{5/2}}+\frac{8\,b\,e^2\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{21\,g\,(e\,f-d\,g)^2\,(f+g\,x)^{3/2}}+\frac{8\,b\,e^3\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{7\,g\,(e\,f-d\,g)^3\,\sqrt{f+g\,x}}-\frac{8\,b\,e^{7/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{7\,g\,(e\,f-d\,g)^{7/2}}-\frac{2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{7\,g\,(f+g\,x)^{7/2}}-\frac{16\,b^2\,e^{7/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{7\,g\,(e\,f-d\,g)^{7/2}}-\frac{8\,b^2\,e^{7/2}\,n^2\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{7\,g\,(e\,f-d\,g)^{7/2}}$$

Result (type 5, 894 leaves):

$$\frac{1}{7\,g\,(e\,f-d\,g)^4\,(e\,f+e\,g\,x)^3\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e}}}$$

$$2\,b^2\,e^3\,n^2\left(7\,g\,(d+e\,x)\,(e\,f+e\,g\,x)^3\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\right.$$

$$\text{HypergeometricPFQ}\left[\left\{1,1,1,\frac{9}{2}\right\},\{2,2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-7\,g\,(d+e\,x)\,(e\,f+e\,g\,x)^3$$

$$\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\;\text{HypergeometricPFQ}\left[\left\{1,1,\frac{9}{2}\right\},\{2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\,\text{Log}[d+e\,x]+$$

$$(e\,f-d\,g)\left(e^3\,f^3\left(-1+\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\right)-3\,e^2\,f^2\,g\left(-(d+e\,x)\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\right.\right.+$$

$$d\left(-1+\sqrt{\frac{e f-d g+g\,(d+e x)}{e f-d g}}\right)\Bigg)+3 e f g^2\left(-2 d\,(d+e x)\sqrt{\frac{e f-d g+g\,(d+e x)}{e f-d g}}+(d+e x)^2\sqrt{\frac{e f-d g+g\,(d+e x)}{e f-d g}}+d^2\left(-1+\sqrt{\frac{e f-d g+g\,(d+e x)}{e f-d g}}\right)\right)+g^3\left(3 d^2\,(d+e x)\sqrt{\frac{e f-d g+g\,(d+e x)}{e f-d g}}-3 d\,(d+e x)^2\sqrt{\frac{e f-d g+g\,(d+e x)}{e f-d g}}+(d+e x)^3\sqrt{\frac{e f-d g+g\,(d+e x)}{e f-d g}}-d^3\left(-1+\sqrt{\frac{e f-d g+g\,(d+e x)}{e f-d g}}\right)\right)\Bigg)\,\mathrm{Log}[d+e x]^2\Bigg)+$$

$$\frac{1}{105 g}4 b e^{7/2} n\left(-\frac{30\,\mathrm{ArcTanh}\left[\frac{\sqrt{e}\sqrt{\frac{e f-d g+g\,(d+e x)}{e}}}{\sqrt{e f-d g}}\right]}{(e f-d g)^{7/2}}+\left(\sqrt{e}\sqrt{\frac{e f-d g+g\,(d+e x)}{e}}\right.\right.$$

$$\left(6\,(e f-d g)^2\,(e f+e g x)+10\,(e f-d g)\,(e f+e g x)^2+30\,(e f+e g x)^3-\right.$$

$$\left.\left.\left.15\,(e f-d g)^3\,\mathrm{Log}[d+e x]\right)\right)\Big/\left((e f-d g)^3\,(e f+e g x)^4\right)\right)$$

$$\left(a+b\left(-n\,\mathrm{Log}[d+e x]+\mathrm{Log}\left[c\,(d+e x)^n\right]\right)\right)-\frac{2\left(a+b\left(-n\,\mathrm{Log}[d+e x]+\mathrm{Log}\left[c\,(d+e x)^n\right]\right)\right)^2}{7 g\,(f+g x)^{7/2}}$$

Problem 187: Result more than twice size of optimal antiderivative.

$$\int\frac{(a+b\,\mathrm{Log}[c\,(e+f x)])^2}{d e+d f x}\,dx$$

Optimal (type 3, 27 leaves, 4 steps):

$$\frac{(a+b\,\mathrm{Log}[c\,(e+f x)])^3}{3 b d f}$$

Result (type 3, 61 leaves):

$$\frac{a^2\,\mathrm{Log}[c\,(e+f x)]}{d f}+\frac{a b\,\mathrm{Log}[c\,(e+f x)]^2}{d f}+\frac{b^2\,\mathrm{Log}[c\,(e+f x)]^3}{3 d f}$$

Problem 198: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(f+g x)^{5/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{d+e x} \, dx$$

Optimal (type 4, 485 leaves, 27 steps):

$$-\frac{92 b (e f-d g)^2 n \sqrt{f+g x}}{15 e^3}-\frac{32 b (e f-d g) n (f+g x)^{3/2}}{45 e^2}-\frac{4 b n (f+g x)^{5/2}}{25 e}+\frac{92 b (e f-d g)^{5/2} n \operatorname{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]}{15 e^{7/2}}+\frac{2 b (e f-d g)^{5/2} n \operatorname{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]^2}{e^{7/2}}+\frac{2 (e f-d g)^2 \sqrt{f+g x} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{e^3}+\frac{2 (e f-d g) (f+g x)^{3/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{3 e^2}+\frac{2 (f+g x)^{5/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{5 e}-\frac{2 (e f-d g)^{5/2} \operatorname{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{e^{7/2}}-\frac{4 b (e f-d g)^{5/2} n \operatorname{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \operatorname{Log}\left[\frac{2}{1-\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{e^{7/2}}-\frac{2 b (e f-d g)^{5/2} n \operatorname{PolyLog}\left[2, 1-\frac{2}{1-\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{e^{7/2}}$$

Result (type 5, 2046 leaves):

$$\left(2 b f^2 n \sqrt{\frac{e f-d g+g (d+e x)}{e}} \left(-2 \sqrt{g} \sqrt{d+e x} \operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},\frac{-e f+d g}{g (d+e x)}\right]+\sqrt{g} \sqrt{d+e x} \sqrt{\frac{e f-d g+g (d+e x)}{g (d+e x)}} \operatorname{Log}[d+e x]-\sqrt{e f-d g} \operatorname{ArcSinh}\left[\frac{\sqrt{e f-d g}}{\sqrt{g} \sqrt{d+e x}}\right] \operatorname{Log}[d+e x]\right)\right) \Big/$$

$$\left(e\sqrt{g}\ \sqrt{d+e\,x}\ \sqrt{\frac{e\,f+e\,g\,x}{g\,(d+e\,x)}}\right)+\frac{1}{3\,e^2\sqrt{d+e\,x}\ \sqrt{\frac{e\,f+e\,g\,x}{g\,(d+e\,x)}}\ \sqrt{1+\frac{g\,(d+e\,x)}{e\,f-d\,g}}}$$

$$2\,b\,f\,n\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e}}\left(12\,d\,g\sqrt{d+e\,x}\ \sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\right.$$

$$\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},\frac{-e\,f+d\,g}{g\,(d+e\,x)}\right]-$$

$$3\,g\,(d+e\,x)^{3/2}\sqrt{\frac{e\,f+e\,g\,x}{g\,(d+e\,x)}}\ \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]+$$

$$2\sqrt{d+e\,x}\ \sqrt{\frac{e\,f+e\,g\,x}{g\,(d+e\,x)}}\left(e\,f\left(-1+\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\right)+\right.$$

$$\left.\left.g\left(d-4\,d\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}+(d+e\,x)\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\right)\right)\text{Log}[d+e\,x]+\right.$$

$$\left.6\,d\sqrt{g}\ \sqrt{e\,f-d\,g}\ \sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\ \text{ArcSinh}\left[\frac{\sqrt{e\,f-d\,g}}{\sqrt{g}\ \sqrt{d+e\,x}}\right]\text{Log}[d+e\,x]\right)+$$

$$\frac{1}{e^3}b\,g^2\,n\left(-\frac{1}{\sqrt{1+\frac{g\,(d+e\,x)}{e\,f-d\,g}}}2\,d\,(d+e\,x)\sqrt{\frac{e\,f-d\,g}{e}+\frac{g\,(d+e\,x)}{e}}\left(-\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\right.\right.\right.$$

$$\left.\{2,2\},-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]+\frac{1}{3\,g\,(d+e\,x)}2\left(-e\,f+d\,g+e\,f\sqrt{\frac{-e\,f+d\,g-g\,(d+e\,x)}{-e\,f+d\,g}}-\right.$$

$$\left.\left.d\,g\sqrt{\frac{-e\,f+d\,g-g\,(d+e\,x)}{-e\,f+d\,g}}+g\,(d+e\,x)\sqrt{\frac{-e\,f+d\,g-g\,(d+e\,x)}{-e\,f+d\,g}}\right)\text{Log}[d+e\,x]\right)+$$

$$\frac{1}{\sqrt{1+\frac{g\,(d+e\,x)}{e\,f-d\,g}}}(d+e\,x)^2\sqrt{\frac{e\,f-d\,g}{e}+\frac{g\,(d+e\,x)}{e}}$$

$$\left(\frac{1}{4}\left(-\left(\left(16\left(-e^2 f^2+2 d e f g-d^2 g^2+e^2 f^2 \sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}-2 d e f g \sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}+d^2 g^2 \sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}+2 e f g (d+e x) \sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}-2 d g^2 (d+e x) \sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}+g^2 (d+e x)^2 \sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}\right)\right) \Big/ \left(15 g^2 (d+e x)^2\right)\right)-\frac{1}{3 g (d+e x)} 8 (-e f+d g) \text{HypergeometricPFQ}\left[\left\{-\frac{3}{2},1,1\right\},\{2,2\},-\frac{g (d+e x)}{e f-d g}\right]\right)+$$

$$\frac{1}{15 g^2 (d+e x)^2} 2\left(2 e^2 f^2-4 d e f g+2 d^2 g^2-2 e^2 f^2 \sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}+4 d e f g \sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}-2 d^2 g^2 \sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}+e f g (d+e x) \sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}-d g^2 (d+e x) \sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}+3 g^2 (d+e x)^2 \sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}\right) \text{Log}[d+e x]\right)+\frac{1}{\sqrt{1+\frac{e f-d g}{g (d+e x)}}}$$

$$d^2 \sqrt{\frac{e f-d g}{e}+\frac{g (d+e x)}{e}} \left(-4 \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},-\frac{e f-d g}{g (d+e x)}\right]-\right.$$

$$\left.\left.\frac{2\left(1+\frac{e f-d g}{g (d+e x)}\right)^{3/2}\left(1-\frac{\sqrt{e f-d g}\ \text{ArcSinh}\left[\frac{\sqrt{e f-d g}}{\sqrt{g}\ \sqrt{d+e x}}\right]}{\sqrt{g}\ \sqrt{d+e x}\ \sqrt{1+\frac{e f-d g}{g (d+e x)}}}\right)\text{Log}[d+e x]}{-1-\frac{e f-d g}{g (d+e x)}}\right)\right)-$$

$$\frac{1}{e^{7/2}}2\ (e f-d g)^{5/2}\ \text{ArcTanh}\left[\frac{\sqrt{e}\ \sqrt{f+g x}}{\sqrt{e f-d g}}\right]\left(a+b\ (-n\ \text{Log}[d+e x]+\text{Log}[c\ (d+e x)^n])\right)+$$

$$\sqrt{f+g x}\ \left(\frac{1}{15 e^3}2\ \left(23 e^2 f^2-35 d e f g+15 d^2 g^2\right)\left(a+b\ (-n\ \text{Log}[d+e x]+\text{Log}[c\ (d+e x)^n])\right)+\frac{2 g\ (11 e f-5 d g)\ x\ \left(a+b\ (-n\ \text{Log}[d+e x]+\text{Log}[c\ (d+e x)^n])\right)}{15 e^2}+\frac{2 g^2 x^2\ \left(a+b\ (-n\ \text{Log}[d+e x]+\text{Log}[c\ (d+e x)^n])\right)}{5 e}\right)$$

Problem 199: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 417 leaves, 20 steps) :

$$-\frac{16\,b\,(e\,f-d\,g)\,n\,\sqrt{f+g\,x}}{3\,e^2}-\frac{4\,b\,n\,(f+g\,x)^{3/2}}{9\,e}+\frac{16\,b\,(e\,f-d\,g)^{3/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]}{3\,e^{5/2}}+\frac{2\,b\,(e\,f-d\,g)^{3/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]^2}{e^{5/2}}+$$
$$\frac{2\,(e\,f-d\,g)\,\sqrt{f+g\,x}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{e^2}+\frac{2\,(f+g\,x)^{3/2}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{3\,e}-$$
$$\frac{2\,(e\,f-d\,g)^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{e^{5/2}}-$$
$$\frac{4\,b\,(e\,f-d\,g)^{3/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{e^{5/2}}-$$
$$\frac{2\,b\,(e\,f-d\,g)^{3/2}\,n\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{e^{5/2}}$$

Result (type 5, 840 leaves) :

$$\left(2\,b\,f\,n\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e}}\left(-2\,\sqrt{g}\,\sqrt{d+e\,x}\ \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},\frac{-e\,f+d\,g}{g\,(d+e\,x)}\right]+\sqrt{g}\,\sqrt{d+e\,x}\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{g\,(d+e\,x)}}\ \text{Log}[d+e\,x]-\sqrt{e\,f-d\,g}\ \text{ArcSinh}\left[\frac{\sqrt{e\,f-d\,g}}{\sqrt{g}\,\sqrt{d+e\,x}}\right]\text{Log}[d+e\,x]\right)\right)\Bigg/\left(e\,\sqrt{g}\,\sqrt{d+e\,x}\,\sqrt{\frac{e\,f+e\,g\,x}{g\,(d+e\,x)}}\right)+\frac{1}{3\,e^2\,\sqrt{d+e\,x}\,\sqrt{\frac{e\,f+e\,g\,x}{g\,(d+e\,x)}}\,\sqrt{1+\frac{g\,(d+e\,x)}{e\,f-d\,g}}}$$

$$b\,n\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e}}\left(12\,d\,g\,\sqrt{d+e\,x}\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\ \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},\frac{-e\,f+d\,g}{g\,(d+e\,x)}\right]-3\,g\,(d+e\,x)^{3/2}\,\sqrt{\frac{e\,f+e\,g\,x}{g\,(d+e\,x)}}\ \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]+2\,\sqrt{d+e\,x}\,\sqrt{\frac{e\,f+e\,g\,x}{g\,(d+e\,x)}}\left(e\,f\left(-1+\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\right)+g\left(d-4\,d\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}+(d+e\,x)\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\right)\right)\text{Log}[d+e\,x]+6\,d\,\sqrt{g}\,\sqrt{e\,f-d\,g}\,\sqrt{\frac{e\,f-d\,g+g\,(d+e\,x)}{e\,f-d\,g}}\ \text{ArcSinh}\left[\frac{\sqrt{e\,f-d\,g}}{\sqrt{g}\,\sqrt{d+e\,x}}\right]\text{Log}[d+e\,x]\right)-$$

$$\frac{1}{e^{5/2}}2\,(e\,f-d\,g)^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\left(a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)+$$

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

Problem 200: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{f+g x}\,\left(a+b \operatorname{Log}\left[c\,(d+e x)^n\right]\right)}{d+e x}\,dx$$

Optimal (type 4, 349 leaves, 14 steps):

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

Result (type 5, 268 leaves):

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

Problem 202: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 340 leaves, 13 steps):

$$\frac{4\,b\,\sqrt{e}\;n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]}{(e\,f-d\,g)^{3/2}}+\frac{2\,b\,\sqrt{e}\;n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]^2}{(e\,f-d\,g)^{3/2}}+$$

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

$$\frac{4\,b\,\sqrt{e}\;n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{(e\,f-d\,g)^{3/2}}-\frac{2\,b\,\sqrt{e}\;n\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{(e\,f-d\,g)^{3/2}}$$

Result (type 5, 267 leaves):

$$\frac{1}{9\,(f+g\,x)^{3/2}}$$

$$2\left(-\frac{1}{e}2\,b\,n\left(\frac{e\,(f+g\,x)}{g\,(d+e\,x)}\right)^{3/2}\text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},\frac{-e\,f+d\,g}{g\,(d+e\,x)}\right]+\frac{1}{(e\,f-d\,g)^{3/2}}\right.$$

$$9\,(f+g\,x)\left(-b\,\sqrt{g}\;n\,\sqrt{d+e\,x}\,\sqrt{\frac{e\,(f+g\,x)}{g\,(d+e\,x)}}\;\text{ArcSinh}\left[\frac{\sqrt{e\,f-d\,g}}{\sqrt{g}\,\sqrt{d+e\,x}}\right]\,\text{Log}[d+e\,x]+\right.$$

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

$$\left.\left.\sqrt{e}\,\sqrt{f+g\,x}\;\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)\right)$$

Problem 203: Result unnecessarily involves higher level functions.

$$\int\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{(d+e\,x)\,(f+g\,x)^{5/2}}\,dx$$

Optimal (type 4, 406 leaves, 18 steps):

$$-\frac{4\,b\,e\,n}{3\,(e\,f-d\,g)^2\,\sqrt{f+g\,x}}+\frac{16\,b\,e^{3/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]}{3\,(e\,f-d\,g)^{5/2}}+$$

$$\frac{2\,b\,e^{3/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]^2}{(e\,f-d\,g)^{5/2}}+\frac{2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{3\,(e\,f-d\,g)\,(f+g\,x)^{3/2}}+$$

$$\frac{2\,e\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{(e\,f-d\,g)^2\,\sqrt{f+g\,x}}-\frac{2\,e^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{(e\,f-d\,g)^{5/2}}-$$

$$\frac{4\,b\,e^{3/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{(e\,f-d\,g)^{5/2}}-\frac{2\,b\,e^{3/2}\,n\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{(e\,f-d\,g)^{5/2}}$$

Result (type 5, 487 leaves):

$$-\Bigg(\Bigg(2\,b\,n\,(e\,f+e\,g\,x)$$

$$\Bigg(6\,(e\,f-d\,g)^3\,(e\,f+e\,g\,x)^2\,\text{HypergeometricPFQ}\left[\left\{\frac{5}{2},\frac{5}{2},\frac{5}{2}\right\},\left\{\frac{7}{2},\frac{7}{2}\right\},\frac{-e\,f+d\,g}{g\,(d+e\,x)}\right]-$$

$$25\,g^3\,(e\,f-d\,g)^2\,(d+e\,x)^3\,\sqrt{\frac{e\,f+e\,g\,x}{g\,(d+e\,x)}}\,\text{Log}[d+e\,x]+$$

$$75\,g^4\,(-e\,f+d\,g)\,(d+e\,x)^4\,\left(\frac{e\,f+e\,g\,x}{g\,(d+e\,x)}\right)^{3/2}\,\text{Log}[d+e\,x]+$$

$$75\,g^{5/2}\,\sqrt{e\,f-d\,g}\,(d+e\,x)^{5/2}\,(e\,f+e\,g\,x)^2\,\text{ArcSinh}\left[\frac{\sqrt{e\,f-d\,g}}{\sqrt{g}\,\sqrt{d+e\,x}}\right]\,\text{Log}[d+e\,x]\Bigg)\Bigg)\Bigg/$$

$$\left(75\,e\,g^3\,(e\,f-d\,g)^3\,(d+e\,x)^3\,\sqrt{\frac{e\,f+e\,g\,x}{g\,(d+e\,x)}}\,\left(\frac{e\,f-d\,g+g\,(d+e\,x)}{e}\right)^{5/2}\right)\Bigg)-$$

$$\frac{1}{(e\,f-d\,g)^{5/2}}2\,e^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]$$

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

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

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

Problem 204: Result unnecessarily involves higher level functions.

$$\int \frac{(d+e x)^{3/2} \operatorname{Log}[a+b x]}{a+b x} \, dx$$

Optimal (type 4, 381 leaves, 20 steps):

$$-\frac{16 (b d-a e) \sqrt{d+e x}}{3 b^2}-\frac{4 (d+e x)^{3/2}}{9 b}+\frac{16 (b d-a e)^{3/2} \operatorname{ArcTanh}\left[\frac{\sqrt{b} \sqrt{d+e x}}{\sqrt{b d-a e}}\right]}{3 b^{5/2}}+\frac{2 (b d-a e)^{3/2} \operatorname{ArcTanh}\left[\frac{\sqrt{b} \sqrt{d+e x}}{\sqrt{b d-a e}}\right]^2}{b^{5/2}}+\frac{2 (b d-a e) \sqrt{d+e x} \operatorname{Log}[a+b x]}{b^2}+\frac{2 (d+e x)^{3/2} \operatorname{Log}[a+b x]}{3 b}-\frac{2 (b d-a e)^{3/2} \operatorname{ArcTanh}\left[\frac{\sqrt{b} \sqrt{d+e x}}{\sqrt{b d-a e}}\right] \operatorname{Log}[a+b x]}{b^{5/2}}-\frac{4 (b d-a e)^{3/2} \operatorname{ArcTanh}\left[\frac{\sqrt{b} \sqrt{d+e x}}{\sqrt{b d-a e}}\right] \operatorname{Log}\left[\frac{2}{1-\frac{\sqrt{b} \sqrt{d+e x}}{\sqrt{b d-a e}}}\right]}{b^{5/2}}-\frac{2 (b d-a e)^{3/2} \operatorname{PolyLog}\left[2, 1-\frac{2}{1-\frac{\sqrt{b} \sqrt{d+e x}}{\sqrt{b d-a e}}}\right]}{b^{5/2}}$$

Result (type 5, 407 leaves):

$$\frac{1}{3 b^3 \sqrt{d+e x} \sqrt{\frac{b (d+e x)}{b d-a e}}} \sqrt{e} \sqrt{a+b x} \sqrt{\frac{b (d+e x)}{e (a+b x)}} \left(-\frac{1}{\sqrt{\frac{b (d+e x)}{b d-a e}}} 12 b \sqrt{e} \sqrt{a+b x} (d+e x) \operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},\frac{-b d+a e}{e (a+b x)}\right]-3 e^{3/2} (a+b x)^{3/2} \sqrt{\frac{b (d+e x)}{e (a+b x)}} \operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{e (a+b x)}{-b d+a e}\right]+2 \left(\sqrt{e} \sqrt{a+b x} \sqrt{\frac{b (d+e x)}{e (a+b x)}} \left(b e x \sqrt{\frac{b (d+e x)}{b d-a e}}+a e \left(1-3 \sqrt{\frac{b (d+e x)}{b d-a e}}\right)+b d \left(-1+4 \sqrt{\frac{b (d+e x)}{b d-a e}}\right)\right)-3 (b d-a e)^{3/2} \sqrt{\frac{b (d+e x)}{b d-a e}} \operatorname{ArcSinh}\left[\frac{\sqrt{b d-a e}}{\sqrt{e} \sqrt{a+b x}}\right]\right) \operatorname{Log}[a+b x]\right)$$

Problem 205: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{d+e x}\ \text{Log}[a+b x]}{a+b x}\, dx$$

Optimal (type 4, 323 leaves, 14 steps):

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

Result (type 5, 186 leaves):

$$-\left(\left(2 (d+e x)^{3/2} \left(2 \sqrt{e} \sqrt{a+b x}\ \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},\frac{-b d+a e}{e (a+b x)}\right]+\left(-\sqrt{e} \sqrt{a+b x} \sqrt{\frac{b (d+e x)}{e (a+b x)}}+\sqrt{b d-a e}\ \text{ArcSinh}\left[\frac{\sqrt{b d-a e}}{\sqrt{e} \sqrt{a+b x}}\right]\right) \text{Log}[a+b x]\right)\right) \Bigg/ \left(e^{3/2} (a+b x)^{3/2} \left(\frac{b (d+e x)}{e (a+b x)}\right)^{3/2}\right)\right)$$

Problem 207: Result unnecessarily involves higher level functions.

$$\int \frac{\text{Log}[a+b x]}{(a+b x) (d+e x)^{3/2}}\, dx$$

Optimal (type 4, 316 leaves, 13 steps):

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

Result (type 5, 183 leaves):

$$\frac{1}{9\sqrt{d+e x}}2\left(-\frac{2\sqrt{\frac{b(d+e x)}{e(a+b x)}}\ \text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},-\frac{b d-a e}{a e+b e x}\right]}{a e+b e x}+\frac{1}{(b d-a e)^{3/2}}\right.$$
$$\left.9\left(\sqrt{b d-a e}-\sqrt{e}\sqrt{a+b x}\sqrt{\frac{b(d+e x)}{e(a+b x)}}\ \text{ArcSinh}\left[\frac{\sqrt{b d-a e}}{\sqrt{e}\sqrt{a+b x}}\right]\right)\text{Log}[a+b x]\right)$$

Problem 208: Result unnecessarily involves higher level functions.

$$\int\frac{\text{Log}[a+b x]}{(a+b x)(d+e x)^{5/2}}\,dx$$

Optimal (type 4, 372 leaves, 18 steps):

$$-\frac{4 b}{3(b d-a e)^2\sqrt{d+e x}}+\frac{16 b^{3/2}\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{d+e x}}{\sqrt{b d-a e}}\right]}{3(b d-a e)^{5/2}}+\frac{2 b^{3/2}\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{d+e x}}{\sqrt{b d-a e}}\right]^2}{(b d-a e)^{5/2}}+$$
$$\frac{2\,\text{Log}[a+b x]}{3(b d-a e)(d+e x)^{3/2}}+\frac{2 b\,\text{Log}[a+b x]}{(b d-a e)^2\sqrt{d+e x}}-\frac{2 b^{3/2}\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{d+e x}}{\sqrt{b d-a e}}\right]\text{Log}[a+b x]}{(b d-a e)^{5/2}}-$$
$$\frac{4 b^{3/2}\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{d+e x}}{\sqrt{b d-a e}}\right]\text{Log}\left[\frac{2}{1-\frac{\sqrt{b}\sqrt{d+e x}}{\sqrt{b d-a e}}}\right]}{(b d-a e)^{5/2}}-\frac{2 b^{3/2}\text{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+e x}}{\sqrt{b d-a e}}}\right]}{(b d-a e)^{5/2}}$$

Result (type 5, 197 leaves):

$$\frac{1}{75(d+e x)^{3/2}}2\left(-\frac{6\left(\frac{b(d+e x)}{e(a+b x)}\right)^{3/2}\text{HypergeometricPFQ}\left[\left\{\frac{5}{2},\frac{5}{2},\frac{5}{2}\right\},\left\{\frac{7}{2},\frac{7}{2}\right\},\frac{-b d+a e}{e(a+b x)}\right]}{e(a+b x)}+\frac{1}{(b d-a e)^{5/2}}\right.$$
$$25\left(\sqrt{b d-a e}\,(4 b d-a e+3 b e x)-3 e^{3/2}(a+b x)^{3/2}\left(\frac{b(d+e x)}{e(a+b x)}\right)^{3/2}\text{ArcSinh}\left[\frac{\sqrt{b d-a e}}{\sqrt{e}\sqrt{a+b x}}\right]\right)$$
$$\left.\text{Log}[a+b x]\right)$$

Problem 225: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 215 leaves, 10 steps):

$$-\frac{2abinx}{g}+\frac{2b^2in^2x}{g}-\frac{2b^2in(d+ex)\,\text{Log}\left[c(d+ex)^n\right]}{eg}+\frac{i(d+ex)\left(a+b\,\text{Log}\left[c(d+ex)^n\right]\right)^2}{eg}+\frac{(gh-fi)\left(a+b\,\text{Log}\left[c(d+ex)^n\right]\right)^2\text{Log}\left[\frac{e(f+gx)}{ef-dg}\right]}{g^2}+\frac{2b(gh-fi)n\left(a+b\,\text{Log}\left[c(d+ex)^n\right]\right)\text{PolyLog}\left[2,-\frac{g(d+ex)}{ef-dg}\right]}{g^2}-\frac{2b^2(gh-fi)n^2\,\text{PolyLog}\left[3,-\frac{g(d+ex)}{ef-dg}\right]}{g^2}$$

Result (type 4, 451 leaves):

$$\frac{1}{eg^2}\Bigg(egix\left(a-bn\,\text{Log}[d+ex]+b\,\text{Log}\left[c(d+ex)^n\right]\right)^2+e(gh-fi)\left(a-bn\,\text{Log}[d+ex]+b\,\text{Log}\left[c(d+ex)^n\right]\right)^2\text{Log}[f+gx]+2beghn\left(a-bn\,\text{Log}[d+ex]+b\,\text{Log}\left[c(d+ex)^n\right]\right)\left(\text{Log}[d+ex]\,\text{Log}\left[\frac{e(f+gx)}{ef-dg}\right]+\text{PolyLog}\left[2,\frac{g(d+ex)}{-ef+dg}\right]\right)-2bin\left(a-bn\,\text{Log}[d+ex]+b\,\text{Log}\left[c(d+ex)^n\right]\right)\left(-g(d+ex)(-1+\text{Log}[d+ex])+ef\left(\text{Log}[d+ex]\,\text{Log}\left[\frac{e(f+gx)}{ef-dg}\right]+\text{PolyLog}\left[2,\frac{g(d+ex)}{-ef+dg}\right]\right)\right)+b^2in^2\left(g(d+ex)\left(2-2\,\text{Log}[d+ex]+\text{Log}[d+ex]^2\right)-ef\left(\text{Log}[d+ex]^2\,\text{Log}\left[\frac{e(f+gx)}{ef-dg}\right]+2\,\text{Log}[d+ex]\,\text{PolyLog}\left[2,\frac{g(d+ex)}{-ef+dg}\right]-2\,\text{PolyLog}\left[3,\frac{g(d+ex)}{-ef+dg}\right]\right)\right)+b^2eghn^2\left(\text{Log}[d+ex]^2\,\text{Log}\left[\frac{e(f+gx)}{ef-dg}\right]+2\,\text{Log}[d+ex]\,\text{PolyLog}\left[2,\frac{g(d+ex)}{-ef+dg}\right]-2\,\text{PolyLog}\left[3,\frac{g(d+ex)}{-ef+dg}\right]\right)\Bigg)$$

Problem 229: Result more than twice size of optimal antiderivative.

$$\int\frac{(h+ix)^2\left(a+b\,\text{Log}\left[c(d+ex)^n\right]\right)^3}{f+gx}\,dx$$

Optimal (type 4, 660 leaves, 23 steps):

$$\frac{6\,a\,b^2\,i\,(e\,h-d\,i)\,n^2\,x}{e\,g}+\frac{6\,a\,b^2\,i\,(g\,h-f\,i)\,n^2\,x}{g^2}-\frac{6\,b^3\,i\,(e\,h-d\,i)\,n^3\,x}{e\,g}-$$
$$\frac{6\,b^3\,i\,(g\,h-f\,i)\,n^3\,x}{g^2}-\frac{3\,b^3\,i^2\,n^3\,(d+e\,x)^2}{8\,e^2\,g}+\frac{6\,b^3\,i\,(e\,h-d\,i)\,n^2\,(d+e\,x)\,\text{Log}\left[c\,(d+e\,x)^n\right]}{e^2\,g}+$$
$$\frac{6\,b^3\,i\,(g\,h-f\,i)\,n^2\,(d+e\,x)\,\text{Log}\left[c\,(d+e\,x)^n\right]}{e\,g^2}+\frac{3\,b^2\,i^2\,n^2\,(d+e\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{4\,e^2\,g}-$$
$$\frac{3\,b\,i\,(e\,h-d\,i)\,n\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{e^2\,g}-$$
$$\frac{3\,b\,i\,(g\,h-f\,i)\,n\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{e\,g^2}-\frac{3\,b\,i^2\,n\,(d+e\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{4\,e^2\,g}+$$
$$\frac{i\,(e\,h-d\,i)\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3}{e^2\,g}+\frac{i\,(g\,h-f\,i)\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3}{e\,g^2}+$$
$$\frac{i^2\,(d+e\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3}{2\,e^2\,g}+\frac{(g\,h-f\,i)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]}{g^3}+$$
$$\frac{3\,b\,(g\,h-f\,i)^2\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{PolyLog}\left[2,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g^3}-$$
$$\frac{6\,b^2\,(g\,h-f\,i)^2\,n^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[3,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g^3}+$$
$$\frac{6\,b^3\,(g\,h-f\,i)^2\,n^3\,\text{PolyLog}\left[4,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g^3}$$

Result (type 4, 1474 leaves):

$$\frac{1}{8\,e^2\,g^3}\Bigg(8\,e^2\,g\,i\,(2\,g\,h-f\,i)\,x\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3+$$
$$4\,e^2\,g^2\,i^2\,x^2\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3+$$
$$8\,e^2\,(g\,h-f\,i)^2\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3\,\text{Log}[f+g\,x]+$$
$$24\,b\,e^2\,g^2\,h^2\,n\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2$$
$$\left(\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)+6\,b\,i^2\,n$$
$$\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\Bigg(e\,g\,(e\,x\,(4\,f-g\,x)+2\,d\,(2\,f+g\,x))-2\,\text{Log}[d+e\,x]$$
$$\left(g\,(d+e\,x)\,(2\,e\,f+d\,g-e\,g\,x)-2\,e^2\,f^2\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]\right)+4\,e^2\,f^2\,\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\Bigg)-$$
$$48\,b\,e\,g\,h\,i\,n\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\Bigg(-g\,(d+e\,x)\,(-1+\text{Log}[d+e\,x])+$$
$$e\,f\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)\Bigg)+$$
$$48\,b^2\,e\,g\,h\,i\,n^2\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)$$

$$\left(g\,(d+e\,x)\,\left(2-2\,\text{Log}[d+e\,x]+\text{Log}[d+e\,x]^2\right)-e\,f\,\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+\right.\right.$$

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

$$\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\left(4\,e\,f\,g\,(d+e\,x)\,\left(2-2\,\text{Log}[d+e\,x]+\text{Log}[d+e\,x]^2\right)-\right.$$

$$g^2\,\left(e\,x\,(-6\,d+e\,x)+\left(6\,d^2+4\,d\,e\,x-2\,e^2\,x^2\right)\,\text{Log}[d+e\,x]-2\,\left(d^2-e^2\,x^2\right)\,\text{Log}[d+e\,x]^2\right)-$$

$$4\,e^2\,f^2\,\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+\right.$$

$$\left.\left.2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-2\,\text{PolyLog}\left[3,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)\right)+$$

$$48\,b^2\,e^2\,g^2\,h^2\,n^2\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\left(\frac{1}{2}\,\text{Log}[d+e\,x]^2\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+\right.$$

$$\left.\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-\text{PolyLog}\left[3,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)+$$

$$8\,b^3\,e^2\,g^2\,h^2\,n^3\,\left(\text{Log}[d+e\,x]^3\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+3\,\text{Log}[d+e\,x]^2\,\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-\right.$$

$$\left.6\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[3,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]+6\,\text{PolyLog}\left[4,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)-$$

$$16\,b^3\,e\,g\,h\,i\,n^3\,\left(-g\,(d+e\,x)\,\left(-6+6\,\text{Log}[d+e\,x]-3\,\text{Log}[d+e\,x]^2+\text{Log}[d+e\,x]^3\right)+\right.$$

$$e\,f\,\left(\text{Log}[d+e\,x]^3\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+3\,\text{Log}[d+e\,x]^2\,\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-\right.$$

$$\left.\left.6\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[3,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]+6\,\text{PolyLog}\left[4,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)\right)+$$

$$b^3\,i^2\,n^3\,\left(-8\,e\,f\,g\,(d+e\,x)\,\left(-6+6\,\text{Log}[d+e\,x]-3\,\text{Log}[d+e\,x]^2+\text{Log}[d+e\,x]^3\right)-\right.$$

$$g^2\,\left(3\,e\,x\,(-14\,d+e\,x)+6\,\left(7\,d^2+6\,d\,e\,x-e^2\,x^2\right)\,\text{Log}[d+e\,x]-\right.$$

$$\left.6\,\left(3\,d^2+2\,d\,e\,x-e^2\,x^2\right)\,\text{Log}[d+e\,x]^2+4\,\left(d^2-e^2\,x^2\right)\,\text{Log}[d+e\,x]^3\right)+$$

$$8\,e^2\,f^2\,\left(\text{Log}[d+e\,x]^3\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+3\,\text{Log}[d+e\,x]^2\,\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-\right.$$

$$\left.\left.\left.6\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[3,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]+6\,\text{PolyLog}\left[4,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)\right)\right)$$

Problem 230: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 308 leaves, 12 steps):

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

Result (type 4, 776 leaves) :

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

Problem 231: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 158 leaves, 5 steps):

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

Result (type 4, 335 leaves):

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

Problem 256: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^5\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{f+g\,x^2}\,dx$$

Optimal (type 4, 397 leaves, 16 steps):

$$-\frac{b\,d\,f\,n\,x}{2\,e\,g^2}+\frac{b\,d^3\,n\,x}{4\,e^3\,g}+\frac{b\,f\,n\,x^2}{4\,g^2}-\frac{b\,d^2\,n\,x^2}{8\,e^2\,g}+\frac{b\,d\,n\,x^3}{12\,e\,g}-\frac{b\,n\,x^4}{16\,g}+\frac{b\,d^2\,f\,n\,\text{Log}[d+e\,x]}{2\,e^2\,g^2}-\frac{b\,d^4\,n\,\text{Log}[d+e\,x]}{4\,e^4\,g}-\frac{f\,x^2\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,g^2}+\frac{x^4\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{4\,g}+\frac{f^2\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\text{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,g^3}+\frac{f^2\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\text{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,g^3}+\frac{b\,f^2\,n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,g^3}+\frac{b\,f^2\,n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,g^3}$$

Result (type 4, 373 leaves):

$$\frac{1}{48 g^3}\left(-24 f g x^2 \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)+12 g^2 x^4 \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)+24 f^2 \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[f+g x^2\right]+b n \left(\frac{12 f g \left(e x (-2 d+e x)+2 \left(d^2-e^2 x^2\right) \text{Log}[d+e x]\right)}{e^2}+\frac{1}{e^4} g^2 \left(e x \left(12 d^3-6 d^2 e x+4 d e^2 x^2-3 e^3 x^3\right)-12 \left(d^4-e^4 x^4\right) \text{Log}[d+e x]\right)+24 f^2 \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)+24 f^2 \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)\right)$$

Problem 257: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 278 leaves, 13 steps):

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

Result (type 4, 283 leaves):

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

Problem 258: Result unnecessarily involves imaginary or complex numbers.

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

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

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

Result (type 4, 189 leaves):

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

Problem 259: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 245 leaves, 12 steps):

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

Result (type 4, 264 leaves):

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

Problem 260: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 331 leaves, 15 steps):

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

Result (type 4, 340 leaves):

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

Problem 261: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 369 leaves, 16 steps):

$$-\frac{a f x}{g^2}+\frac{b f n x}{g^2}-\frac{b d^2 n x}{3 e^2 g}+\frac{b d n x^2}{6 e g}-\frac{b n x^3}{9 g}+\frac{b d^3 n \operatorname{Log}[d+e x]}{3 e^3 g}-\frac{b f (d+e x) \operatorname{Log}\left[c (d+e x)^n\right]}{e g^2}+\frac{x^3 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{3 g}+\frac{(-f)^{3/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 g^{5/2}}-\frac{(-f)^{3/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 g^{5/2}}-\frac{b (-f)^{3/2} n \operatorname{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 g^{5/2}}+\frac{b (-f)^{3/2} n \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 g^{5/2}}$$

Result (type 4, 374 leaves):

$$\frac{1}{6 g^{5/2}}\left(-6 f \sqrt{g} x \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)+2 g^{3/2} x^3 \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)+6 f^{3/2} \operatorname{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right] \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)+3 b n \left(-\frac{2 f \sqrt{g} (d+e x) (-1+\operatorname{Log}[d+e x])}{e}+\frac{g^{3/2} \left(e x \left(-6 d^2+3 d e x-2 e^2 x^2\right)+6 \left(d^3+e^3 x^3\right) \operatorname{Log}[d+e x]\right)}{9 e^3}+i f^{3/2} \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)-i f^{3/2} \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)\right)$$

Problem 262: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 276 leaves, 13 steps):

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

Result (type 4, 287 leaves):

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

Problem 263: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 239 leaves, 8 steps):

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

Result (type 4, 209 leaves):

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

Problem 264: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 290 leaves, 14 steps):

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

Result (type 4, 298 leaves):

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

Problem 265: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{x^4\,(f+g\,x^2)}\,dx$$

Optimal (type 4, 388 leaves, 17 steps):

$$-\frac{b\,e\,n}{6\,d\,f\,x^2}+\frac{b\,e^2\,n}{3\,d^2\,f\,x}+\frac{b\,e^3\,n\,\text{Log}[x]}{3\,d^3\,f}-\frac{b\,e\,g\,n\,\text{Log}[x]}{d\,f^2}-\frac{b\,e^3\,n\,\text{Log}[d+e\,x]}{3\,d^3\,f}+\frac{b\,e\,g\,n\,\text{Log}[d+e\,x]}{d\,f^2}-\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{3\,f\,x^3}+\frac{g\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{f^2\,x}+\frac{g^{3/2}\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\text{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right]}{2\,(-f)^{5/2}}-\frac{g^{3/2}\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\text{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right]}{2\,(-f)^{5/2}}-\frac{b\,g^{3/2}\,n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\sqrt{-f}-d\sqrt{g}}\right]}{2\,(-f)^{5/2}}+\frac{b\,g^{3/2}\,n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\sqrt{-f}+d\sqrt{g}}\right]}{2\,(-f)^{5/2}}$$

Result (type 4, 383 leaves):

$$\frac{1}{6\,f^{5/2}}\left(-\frac{2\,f^{3/2}\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{x^3}+\frac{6\sqrt{f}\,g\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{x}+6\,g^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)+b\,n\left(-\frac{6\sqrt{f}\,g\left(e\,x\,\text{Log}[x]-(d+e\,x)\,\text{Log}[d+e\,x]\right)}{d\,x}+\frac{1}{d^3\,x^3}f^{3/2}\left(-d\,e\,x\,(d-2\,e\,x)+2\,e^3\,x^3\,\text{Log}[x]-2\left(d^3+e^3\,x^3\right)\text{Log}[d+e\,x]\right)+3\,i\,g^{3/2}\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]\right)-3\,i\,g^{3/2}\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]\right)\right)\right)$$

Problem 266: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^5\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{\left(f+g\,x^2\right)^2}\,dx$$

Optimal (type 4, 417 leaves, 19 steps):

$$\frac{b\,d\,n\,x}{2\,e\,g^2}-\frac{b\,n\,x^2}{4\,g^2}+\frac{b\,d\,e\,f^{3/2}\,n\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]}{2\,g^{5/2}\,\left(e^2\,f+d^2\,g\right)}-\frac{b\,d^2\,n\,\text{Log}[d+e\,x]}{2\,e^2\,g^2}+$$
$$\frac{b\,e^2\,f^2\,n\,\text{Log}[d+e\,x]}{2\,g^3\,\left(e^2\,f+d^2\,g\right)}+\frac{x^2\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)}{2\,g^2}-\frac{f^2\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)}{2\,g^3\,\left(f+g\,x^2\right)}-$$
$$\frac{f\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g^3}-\frac{f\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g^3}-$$
$$\frac{b\,e^2\,f^2\,n\,\text{Log}\left[f+g\,x^2\right]}{4\,g^3\,\left(e^2\,f+d^2\,g\right)}-\frac{b\,f\,n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g^3}-\frac{b\,f\,n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g^3}$$

Result (type 4, 560 leaves):

$$\frac{1}{8\,g^3}\left(4\,g\,x^2\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)-\frac{4\,f^2\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)}{f+g\,x^2}-\right.$$
$$8\,f\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)\,\text{Log}\left[f+g\,x^2\right]+$$
$$b\,n\,\left(-\frac{2\,g\,\left(e\,x\,\left(-2\,d+e\,x\right)+2\,\left(d^2-e^2\,x^2\right)\,\text{Log}[d+e\,x]\right)}{e^2}+\right.$$
$$\left(f^{3/2}\,\left(2\,e\,\left(-i\,\sqrt{f}+\sqrt{g}\,x\right)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]+2\,i\,\sqrt{g}\,\left(d+e\,x\right)\,\text{Log}[d+e\,x]-\right.\right.$$
$$\left.\left.e\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\,\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\,\sqrt{f}-i\,d\,\sqrt{g}\right)\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\right)+$$
$$\left(i\,f^{3/2}\,\left(2\,e\,\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\,\sqrt{g}\,\left(d+e\,x\right)\,\text{Log}[d+e\,x]+\right.\right.$$
$$\left.\left.e\,\left(i\,\sqrt{f}+\sqrt{g}\,x\right)\,\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\,\sqrt{f}+i\,d\,\sqrt{g}\right)\,\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\right)-$$
$$8\,f\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,\left(d+e\,x\right)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,\left(d+e\,x\right)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)-$$
$$\left.\left.8\,f\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,\left(d+e\,x\right)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,\left(d+e\,x\right)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)\right)$$

Problem 267: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 344 leaves, 16 steps):

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

Result (type 4, 488 leaves):

$$\frac{1}{8\,g^2}\left(\frac{4\,f\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)}{f+g\,x^2}+\right.$$
$$4\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)\,\text{Log}\left[f+g\,x^2\right]+$$
$$b\,n\,\left(\left(\sqrt{f}\,\left(2\,i\,e\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\,i\,\sqrt{g}\,\left(d+e\,x\right)\,\text{Log}[d+e\,x]+\right.\right.\right.$$
$$\left.\left.e\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\,\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\,\sqrt{f}-i\,d\,\sqrt{g}\right)\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\right)-$$
$$\left(i\,\sqrt{f}\,\left(2\,e\,\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\,\sqrt{g}\,\left(d+e\,x\right)\,\text{Log}[d+e\,x]+\right.\right.$$
$$\left.\left.e\,\left(i\,\sqrt{f}+\sqrt{g}\,x\right)\,\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\,\sqrt{f}+i\,d\,\sqrt{g}\right)\,\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\right)+$$
$$4\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,\left(d+e\,x\right)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,\left(d+e\,x\right)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)+$$
$$\left.\left.4\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,\left(d+e\,x\right)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,\left(d+e\,x\right)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)\right)$$

Problem 269: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 383 leaves, 18 steps):

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

Result (type 4, 559 leaves):

$$\frac{a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]}{2\,f^2+2\,f\,g\,x^2}+\frac{\text{Log}[x]\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)}{f^2}-$$
$$\frac{\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)\,\text{Log}\left[f+g\,x^2\right]}{2\,f^2}+$$
$$\frac{1}{8\,f^2}\,b\,n\,\left(8\,\text{Log}[x]\,\left(\text{Log}[d+e\,x]-\text{Log}\left[1+\frac{e\,x}{d}\right]\right)+\right.$$
$$\left(\sqrt{f}\,\left(2\,i\,e\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\,i\,\sqrt{g}\,\left(d+e\,x\right)\,\text{Log}[d+e\,x]+\right.\right.$$
$$\left.\left.e\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\,\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\,\sqrt{f}-i\,d\,\sqrt{g}\right)\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\right)-$$
$$\left(i\,\sqrt{f}\,\left(2\,e\,\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\,\sqrt{g}\,\left(d+e\,x\right)\,\text{Log}[d+e\,x]+e\,\left(i\,\sqrt{f}+\sqrt{g}\,x\right)\right.\right.$$
$$\left.\left.\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\,\sqrt{f}+i\,d\,\sqrt{g}\right)\,\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\right)-8\,\text{PolyLog}\left[2,\,-\frac{e\,x}{d}\right]-$$
$$4\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,\left(d+e\,x\right)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\,\frac{\sqrt{g}\,\left(d+e\,x\right)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)-$$
$$\left.4\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,\left(d+e\,x\right)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\,\frac{\sqrt{g}\,\left(d+e\,x\right)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)$$

Problem 270: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 460 leaves, 21 steps):

$$-\frac{b e n}{2 d f^2 x}+\frac{b d e g^{3/2} n \operatorname{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]}{2 f^{5/2}\left(e^2 f+d^2 g\right)}-\frac{b e^2 n \operatorname{Log}[x]}{2 d^2 f^2}+\frac{b e^2 n \operatorname{Log}[d+e x]}{2 d^2 f^2}+$$

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

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

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

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

Result (type 4, 631 leaves):

$$\frac{1}{8 f^3}\left(-\frac{4 f\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{x^2}-\frac{4 f g\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{f+g x^2}-\right.$$

$$16 g \operatorname{Log}[x]\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)+$$

$$8 g\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[f+g x^2\right]+$$

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

$$\left(\sqrt{f} g\left(2 e\left(-i \sqrt{f}+\sqrt{g} x\right) \operatorname{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]+2 i \sqrt{g}(d+e x) \operatorname{Log}[d+e x]-\right.\right.$$

$$\left.\left.e\left(\sqrt{f}+i \sqrt{g} x\right) \operatorname{Log}\left[f+g x^2\right]\right)\right) \Big/\left(\left(e \sqrt{f}-i d \sqrt{g}\right)\left(\sqrt{f}+i \sqrt{g} x\right)\right)+$$

$$\left(i \sqrt{f} g\left(2 e\left(\sqrt{f}-i \sqrt{g} x\right) \operatorname{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]-2 \sqrt{g}(d+e x) \operatorname{Log}[d+e x]+\right.\right.$$

$$\left.\left.e\left(i \sqrt{f}+\sqrt{g} x\right) \operatorname{Log}\left[f+g x^2\right]\right)\right) \Big/\left(\left(e \sqrt{f}+i d \sqrt{g}\right)\left(\sqrt{f}-i \sqrt{g} x\right)\right)-$$

$$16 g\left(\operatorname{Log}[x]\left(\operatorname{Log}[d+e x]-\operatorname{Log}\left[1+\frac{e x}{d}\right]\right)-\operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]\right)+$$

$$8 g\left(\operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g}(d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\operatorname{PolyLog}\left[2, \frac{\sqrt{g}(d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)+$$

$$\left.\left.8 g\left(\operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g}(d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\operatorname{PolyLog}\left[2, \frac{\sqrt{g}(d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)\right)$$

Problem 271: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^4 \left(a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]\right)}{\left(f+g x^2\right)^2} \, dx$$

Optimal (type 4, 534 leaves, 31 steps):

$$\frac{a x}{g^2}-\frac{b n x}{g^2}-\frac{b e f n \,\text{Log}[d+e x]}{4 \left(e \sqrt{-f}-d \sqrt{g}\right) g^{5/2}}+\frac{b e f n \,\text{Log}[d+e x]}{4 \left(e \sqrt{-f}+d \sqrt{g}\right) g^{5/2}}+$$

$$\frac{b \left(d+e x\right) \text{Log}\left[c \left(d+e x\right)^n\right]}{e g^2}-\frac{f \left(a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]\right)}{4 g^{5/2} \left(\sqrt{-f}-\sqrt{g} x\right)}+\frac{f \left(a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]\right)}{4 g^{5/2} \left(\sqrt{-f}+\sqrt{g} x\right)}-$$

$$\frac{b e f n \,\text{Log}\left[\sqrt{-f}-\sqrt{g} x\right]}{4 \left(e \sqrt{-f}+d \sqrt{g}\right) g^{5/2}}+\frac{3 \sqrt{-f} \left(a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]\right) \text{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{4 g^{5/2}}+$$

$$\frac{b e f n \,\text{Log}\left[\sqrt{-f}+\sqrt{g} x\right]}{4 \left(e \sqrt{-f}-d \sqrt{g}\right) g^{5/2}}-\frac{3 \sqrt{-f} \left(a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]\right) \text{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{4 g^{5/2}}-$$

$$\frac{3 b \sqrt{-f} n \,\text{PolyLog}\left[2,-\frac{\sqrt{g} \left(d+e x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{4 g^{5/2}}+\frac{3 b \sqrt{-f} n \,\text{PolyLog}\left[2,\frac{\sqrt{g} \left(d+e x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{4 g^{5/2}}$$

Result (type 4, 564 leaves):

$$\frac{1}{8 g^{5/2}}\left(8 \sqrt{g}\, x \left(a - b n \,\text{Log}[d+e x] + b \,\text{Log}\left[c\,(d+e x)^n\right]\right) + \frac{4 f \sqrt{g}\, x \left(a - b n\,\text{Log}[d+e x] + b\,\text{Log}\left[c\,(d+e x)^n\right]\right)}{f + g x^2} - 12 \sqrt{f}\,\text{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right] \left(a - b n\,\text{Log}[d+e x] + b\,\text{Log}\left[c\,(d+e x)^n\right]\right) + b n \left(\frac{8 \sqrt{g}\,(d+e x)\,(-1 + \text{Log}[d+e x])}{e} + \left(f \left(-2 e \left(\sqrt{f} + i \sqrt{g}\, x\right) \text{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right] + 2 \sqrt{g}\,(d+e x)\,\text{Log}[d+e x] + i e \left(\sqrt{f} + i \sqrt{g}\, x\right) \text{Log}\left[f+g x^2\right]\right)\right) \Big/ \left(\left(e \sqrt{f} - i d \sqrt{g}\right) \left(\sqrt{f} + i \sqrt{g}\, x\right)\right) - \left(f \left(2 e \left(\sqrt{f} - i \sqrt{g}\, x\right) \text{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right] - 2 \sqrt{g}\,(d+e x)\,\text{Log}[d+e x] + e \left(i \sqrt{f} + \sqrt{g}\, x\right) \text{Log}\left[f+g x^2\right]\right)\right) \Big/ \left(\left(e \sqrt{f} + i d \sqrt{g}\right) \left(\sqrt{f} - i \sqrt{g}\, x\right)\right) - 6 i \sqrt{f} \left(\text{Log}[d+e x]\,\text{Log}\left[1 - \frac{\sqrt{g}\,(d+e x)}{-i e \sqrt{f} + d \sqrt{g}}\right] + \text{PolyLog}\left[2, \frac{\sqrt{g}\,(d+e x)}{-i e \sqrt{f} + d \sqrt{g}}\right]\right) + 6 i \sqrt{f} \left(\text{Log}[d+e x]\,\text{Log}\left[1 - \frac{\sqrt{g}\,(d+e x)}{i e \sqrt{f} + d \sqrt{g}}\right] + \text{PolyLog}\left[2, \frac{\sqrt{g}\,(d+e x)}{i e \sqrt{f} + d \sqrt{g}}\right]\right)\right)\right)$$

Problem 272: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 491 leaves, 28 steps):

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

Result (type 4, 503 leaves):

$$\frac{1}{8 g^{3/2}}\left(-\frac{4 \sqrt{g}\, x \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)}{f+g x^2}+\frac{4 \text{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right] \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)}{\sqrt{f}}+b n \left(\left(2 e \left(\sqrt{f}+i \sqrt{g}\, x\right) \text{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]-2 \sqrt{g} (d+e x) \text{Log}[d+e x]+e \left(-i \sqrt{f}+\sqrt{g}\, x\right) \text{Log}\left[f+g x^2\right]\right)\Big/\left(\left(e \sqrt{f}-i d \sqrt{g}\right) \left(\sqrt{f}+i \sqrt{g}\, x\right)\right)+\left(2 e \left(\sqrt{f}-i \sqrt{g}\, x\right) \text{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]-2 \sqrt{g} (d+e x) \text{Log}[d+e x]+e \left(i \sqrt{f}+\sqrt{g}\, x\right) \text{Log}\left[f+g x^2\right]\right)\Big/\left(\left(e \sqrt{f}+i d \sqrt{g}\right) \left(\sqrt{f}-i \sqrt{g}\, x\right)\right)+\frac{1}{\sqrt{f}} 2 i \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)-\frac{1}{\sqrt{f}} 2 i \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)\right)$$

Problem 273: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 503 leaves, 18 steps):

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

Result (type 4, 511 leaves):

$$\frac{1}{8 f^{3/2}}\left(\frac{4\sqrt{f}\,x\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{f+g\,x^2}+\right.$$

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

$$b\,n\left(\left(\sqrt{f}\left(-2\,e\left(\sqrt{f}+i\sqrt{g}\,x\right)\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]+2\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+\right.\right.\right.$$

$$\left.\left.i\,e\left(\sqrt{f}+i\sqrt{g}\,x\right)\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\sqrt{f}-i\,d\sqrt{g}\right)\left(\sqrt{f}+i\sqrt{g}\,x\right)\right)-$$

$$\left(\sqrt{f}\left(2\,e\left(\sqrt{f}-i\sqrt{g}\,x\right)\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+\right.\right.$$

$$\left.\left.e\left(i\sqrt{f}+\sqrt{g}\,x\right)\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\sqrt{f}+i\,d\sqrt{g}\right)\left(\sqrt{f}-i\sqrt{g}\,x\right)\right)+$$

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

$$\left.\left.2\,i\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]\right)\right)\right)$$

Problem 274: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 560 leaves, 32 steps) :

$$\frac{b\,e\,n\,\text{Log}[x]}{d\,f^2}-\frac{b\,e\,n\,\text{Log}[d+e\,x]}{d\,f^2}-\frac{b\,e\,\sqrt{g}\,n\,\text{Log}[d+e\,x]}{4\,f^2\left(e\,\sqrt{-f}+d\,\sqrt{g}\right)}-\frac{b\,e\,\sqrt{g}\,n\,\text{Log}[d+e\,x]}{4\,f\left(e\,(-f)^{3/2}+d\,f\,\sqrt{g}\right)}-$$

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

$$\frac{b\,e\,\sqrt{g}\,n\,\text{Log}\left[\sqrt{-f}-\sqrt{g}\,x\right]}{4\,f^2\left(e\,\sqrt{-f}+d\,\sqrt{g}\right)}-\frac{3\,\sqrt{g}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{4\,(-f)^{5/2}}+$$

$$\frac{b\,e\,\sqrt{g}\,n\,\text{Log}\left[\sqrt{-f}+\sqrt{g}\,x\right]}{4\,f\left(e\,(-f)^{3/2}+d\,f\,\sqrt{g}\right)}+\frac{3\,\sqrt{g}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{4\,(-f)^{5/2}}+$$

$$\frac{3\,b\,\sqrt{g}\,n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{4\,(-f)^{5/2}}-\frac{3\,b\,\sqrt{g}\,n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{4\,(-f)^{5/2}}$$

Result (type 4, 593 leaves):

$$\frac{1}{8\,f^{5/2}}\left(-\frac{8\,\sqrt{f}\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{x}-\right.$$

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

$$12\,\sqrt{g}\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)+$$

$$b\,n\left(\frac{8\,\sqrt{f}\,\left(e\,x\,\text{Log}[x]-(d+e\,x)\,\text{Log}[d+e\,x]\right)}{d\,x}-\right.$$

$$\left(\sqrt{f}\,\sqrt{g}\,\left(-2\,e\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]+2\,\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+\right.\right.$$

$$\left.\left.i\,e\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\,\sqrt{f}-i\,d\,\sqrt{g}\right)\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\right)+$$

$$\left(\sqrt{f}\,\sqrt{g}\,\left(2\,e\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\,\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+\right.\right.$$

$$\left.\left.e\left(i\,\sqrt{f}+\sqrt{g}\,x\right)\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\,\sqrt{f}+i\,d\,\sqrt{g}\right)\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\right)-$$

$$6\,i\,\sqrt{g}\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)+$$

$$\left.\left.6\,i\,\sqrt{g}\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)\right)$$

Problem 275: Attempted integration timed out after 120 seconds.

$$\int \frac{a + b \operatorname{Log}\left[c\,(d + e\,x)^n\right]}{\sqrt{2 + g\,x^2}}\,dx$$

Optimal (type 4, 326 leaves, 10 steps):

$$\frac{b\,n\,\operatorname{ArcSinh}\left[\frac{\sqrt{g}\,x}{\sqrt{2}}\right]^2}{2\,\sqrt{g}} - \frac{b\,n\,\operatorname{ArcSinh}\left[\frac{\sqrt{g}\,x}{\sqrt{2}}\right]\operatorname{Log}\left[1 + \frac{\sqrt{2}\,e\,e^{\operatorname{ArcSinh}\left[\frac{\sqrt{g}\,x}{\sqrt{2}}\right]}}{d\,\sqrt{g} - \sqrt{2\,e^2 + d^2\,g}}\right]}{\sqrt{g}} -$$

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

$$\frac{b\,n\,\operatorname{PolyLog}\left[2, -\frac{\sqrt{2}\,e\,e^{\operatorname{ArcSinh}\left[\frac{\sqrt{g}\,x}{\sqrt{2}}\right]}}{d\,\sqrt{g} - \sqrt{2\,e^2 + d^2\,g}}\right]}{\sqrt{g}} - \frac{b\,n\,\operatorname{PolyLog}\left[2, -\frac{\sqrt{2}\,e\,e^{\operatorname{ArcSinh}\left[\frac{\sqrt{g}\,x}{\sqrt{2}}\right]}}{d\,\sqrt{g} + \sqrt{2\,e^2 + d^2\,g}}\right]}{\sqrt{g}}$$

Result (type 1, 1 leaves):

???

Problem 276: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 506 leaves, 11 steps):

$$\frac{b\sqrt{f}\, n\sqrt{1+\frac{g x^2}{f}}\, \text{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]^2}{2\sqrt{g}\,\sqrt{f+g x^2}}-\frac{b\sqrt{f}\, n\sqrt{1+\frac{g x^2}{f}}\, \text{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right] \text{Log}\left[1+\frac{e\, e^{\text{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]}\sqrt{f}}{d\sqrt{g}-\sqrt{e^2 f+d^2 g}}\right]}{\sqrt{g}\,\sqrt{f+g x^2}}-$$

$$\frac{b\sqrt{f}\, n\sqrt{1+\frac{g x^2}{f}}\, \text{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right] \text{Log}\left[1+\frac{e\, e^{\text{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]}\sqrt{f}}{d\sqrt{g}+\sqrt{e^2 f+d^2 g}}\right]}{\sqrt{g}\,\sqrt{f+g x^2}}+$$

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

$$\frac{b\sqrt{f}\, n\sqrt{1+\frac{g x^2}{f}}\, \text{PolyLog}\left[2,-\frac{e\, e^{\text{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]}\sqrt{f}}{d\sqrt{g}-\sqrt{e^2 f+d^2 g}}\right]}{\sqrt{g}\,\sqrt{f+g x^2}}-\frac{b\sqrt{f}\, n\sqrt{1+\frac{g x^2}{f}}\, \text{PolyLog}\left[2,-\frac{e\, e^{\text{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]}\sqrt{f}}{d\sqrt{g}+\sqrt{e^2 f+d^2 g}}\right]}{\sqrt{g}\,\sqrt{f+g x^2}}$$

Result (type 1, 1 leaves):

???

Problem 277: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 278 leaves, 9 steps):

$$\frac{i\, b\, n\, \text{ArcSin}\left[\frac{g x}{2}\right]^2}{2 g}-\frac{b\, n\, \text{ArcSin}\left[\frac{g x}{2}\right] \text{Log}\left[1+\frac{2\, e\, e^{i\, \text{ArcSin}\left[\frac{g x}{2}\right]}}{i\, d\, g-\sqrt{4 e^2-d^2 g^2}}\right]}{g}-$$

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

$$\frac{i\, b\, n\, \text{PolyLog}\left[2,-\frac{2\, e\, e^{i\, \text{ArcSin}\left[\frac{g x}{2}\right]}}{i\, d\, g-\sqrt{4 e^2-d^2 g^2}}\right]}{g}+\frac{i\, b\, n\, \text{PolyLog}\left[2,-\frac{2\, e\, e^{i\, \text{ArcSin}\left[\frac{g x}{2}\right]}}{i\, d\, g+\sqrt{4 e^2-d^2 g^2}}\right]}{g}$$

Result (type 1, 1 leaves):

???

Problem 278: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 510 leaves, 11 steps):

$$\frac{i\, b\, f\, n \sqrt{1 - \frac{g^2 x^2}{f^2}}\, \text{ArcSin}\left[\frac{g\,x}{f}\right]^2}{2\, g \sqrt{f - g\, x}\, \sqrt{f + g\, x}} - \frac{b\, f\, n \sqrt{1 - \frac{g^2 x^2}{f^2}}\, \text{ArcSin}\left[\frac{g\,x}{f}\right] \text{Log}\left[1 + \frac{e\, e^{i\, \text{ArcSin}\left[\frac{g\,x}{f}\right]}\, f}{i\, d\, g - \sqrt{e^2 f^2 - d^2 g^2}}\right]}{g \sqrt{f - g\, x}\, \sqrt{f + g\, x}} -$$

$$\frac{b\, f\, n \sqrt{1 - \frac{g^2 x^2}{f^2}}\, \text{ArcSin}\left[\frac{g\,x}{f}\right] \text{Log}\left[1 + \frac{e\, e^{i\, \text{ArcSin}\left[\frac{g\,x}{f}\right]}\, f}{i\, d\, g + \sqrt{e^2 f^2 - d^2 g^2}}\right]}{g \sqrt{f - g\, x}\, \sqrt{f + g\, x}} +$$

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

$$\frac{i\, b\, f\, n \sqrt{1 - \frac{g^2 x^2}{f^2}}\, \text{PolyLog}\left[2, -\frac{e\, e^{i\, \text{ArcSin}\left[\frac{g\,x}{f}\right]}\, f}{i\, d\, g - \sqrt{e^2 f^2 - d^2 g^2}}\right]}{g \sqrt{f - g\, x}\, \sqrt{f + g\, x}} + \frac{i\, b\, f\, n \sqrt{1 - \frac{g^2 x^2}{f^2}}\, \text{PolyLog}\left[2, -\frac{e\, e^{i\, \text{ArcSin}\left[\frac{g\,x}{f}\right]}\, f}{i\, d\, g + \sqrt{e^2 f^2 - d^2 g^2}}\right]}{g \sqrt{f - g\, x}\, \sqrt{f + g\, x}}$$

Result (type 1, 1 leaves):

???

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

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

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

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

Result (type 4, 89 leaves):

$$\frac{1}{4\, e\, f}\left(4\, \text{ArcTanh}\left[\frac{f\, x}{e}\right] \left(\text{Log}\left[\frac{e}{f} + x\right] + \text{Log}\left[\frac{2\, e}{e + f\, x}\right]\right) - \text{Log}\left[\frac{e}{f} + x\right] \left(\text{Log}[4] + \text{Log}\left[\frac{e}{f} + x\right] - 2\, \text{Log}\left[1 - \frac{f\, x}{e}\right]\right) + 2\, \text{PolyLog}\left[2, \frac{e + f\, x}{2\, e}\right]\right)$$

Problem 280: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 42 leaves, 4 steps):

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

Result (type 4, 88 leaves):

$$\frac{1}{4 e f}\left(4 \text{ArcTanh}\left[\frac{f x}{e}\right] \left(\text{Log}\left[\frac{e}{f}+x\right]+\text{Log}\left[\frac{e}{e+f x}\right]\right)-\text{Log}\left[\frac{e}{f}+x\right] \left(\text{Log}[4]+\text{Log}\left[\frac{e}{f}+x\right]-2 \text{Log}\left[1-\frac{f x}{e}\right]\right)+2 \text{PolyLog}\left[2,\frac{e+f x}{2 e}\right]\right)$$

Problem 281: Result more than twice size of optimal antiderivative.

$$\int \frac{a+b \text{Log}\left[\frac{2 e}{e+f x}\right]}{e^2-f^2 x^2} \, dx$$

Optimal (type 4, 41 leaves, 4 steps):

$$\frac{a \text{ArcTanh}\left[\frac{f x}{e}\right]}{e f}+\frac{b \text{PolyLog}\left[2,1-\frac{2 e}{e+f x}\right]}{2 e f}$$

Result (type 4, 115 leaves):

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

Problem 282: Result more than twice size of optimal antiderivative.

$$\int \frac{a+b \text{Log}\left[\frac{e}{e+f x}\right]}{e^2-f^2 x^2} \, dx$$

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

$$\frac{\text{ArcTanh}\left[\frac{f x}{e}\right] (a-b \text{Log}[2])}{e f}+\frac{b \text{PolyLog}\left[2,1-\frac{2 e}{e+f x}\right]}{2 e f}$$

Result (type 4, 114 leaves):

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

Problem 293: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^7 \,\text{Log}[c+d\,x]}{a+b\,x^4}\,dx$$

Optimal (type 4, 498 leaves, 23 steps):

$$\frac{c^3 x}{4 b d^3}-\frac{c^2 x^2}{8 b d^2}+\frac{c x^3}{12 b d}-\frac{x^4}{16 b}-\frac{c^4 \text{Log}[c+d x]}{4 b d^4}+\frac{x^4 \text{Log}[c+d x]}{4 b}-\frac{a \text{Log}\left[\frac{d\left(\sqrt{-\sqrt{-a}}-b^{1/4} x\right)}{b^{1/4} c+\sqrt{-\sqrt{-a}}\, d}\right] \text{Log}[c+d x]}{4 b^2}-\frac{a \text{Log}\left[\frac{d\left((-a)^{1/4}-b^{1/4} x\right)}{b^{1/4} c+(-a)^{1/4} d}\right] \text{Log}[c+d x]}{4 b^2}-\frac{a \text{Log}\left[-\frac{d\left(\sqrt{-\sqrt{-a}}+b^{1/4} x\right)}{b^{1/4} c-\sqrt{-\sqrt{-a}}\, d}\right] \text{Log}[c+d x]}{4 b^2}-\frac{a \text{Log}\left[-\frac{d\left((-a)^{1/4}+b^{1/4} x\right)}{b^{1/4} c-(-a)^{1/4} d}\right] \text{Log}[c+d x]}{4 b^2}-\frac{a \text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c-\sqrt{-\sqrt{-a}}\, d}\right]}{4 b^2}-\frac{a \text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c+\sqrt{-\sqrt{-a}}\, d}\right]}{4 b^2}-\frac{a \text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-a)^{1/4} d}\right]}{4 b^2}-\frac{a \text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-a)^{1/4} d}\right]}{4 b^2}$$

Result (type 4, 441 leaves):

$$-\frac{1}{48 b^2 d^4}\Bigg(-12 b c^3 d x+6 b c^2 d^2 x^2-4 b c d^3 x^3+3 b d^4 x^4+12 b c^4 \text{Log}[c+d x]-12 b d^4 x^4 \text{Log}[c+d x]+12 a d^4 \text{Log}[c+d x] \text{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{1/4} a^{1/4} d}\right]+12 a d^4 \text{Log}[c+d x] \text{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{1/4} a^{1/4} d}\right]+12 a d^4 \text{Log}[c+d x] \text{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{3/4} a^{1/4} d}\right]+12 a d^4 \text{Log}[c+d x] \text{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{3/4} a^{1/4} d}\right]+12 a d^4 \text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{1/4} a^{1/4} d}\right]+12 a d^4 \text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{1/4} a^{1/4} d}\right]+12 a d^4 \text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{3/4} a^{1/4} d}\right]+12 a d^4 \text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{3/4} a^{1/4} d}\right]\Bigg)$$

Problem 294: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^3 \,\text{Log}[c+d\,x]}{a+b\,x^4}\,dx$$

Optimal (type 4, 401 leaves, 18 steps):

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

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

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

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

Result (type 4, 328 leaves):

$$\frac{1}{4b}\left(\text{Log}[c+dx]\,\text{Log}\left[1-\frac{b^{1/4}(c+dx)}{b^{1/4}c-(-1)^{1/4}a^{1/4}d}\right]+\text{Log}[c+dx]\,\text{Log}\left[1-\frac{b^{1/4}(c+dx)}{b^{1/4}c+(-1)^{1/4}a^{1/4}d}\right]+\right.$$

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

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

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

Problem 295: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}[c+dx]}{x\left(a+bx^4\right)}\,dx$$

Optimal (type 4, 433 leaves, 22 steps):

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

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

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

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

Result (type 4, 362 leaves):

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

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

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

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

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

Problem 296: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^5\,\text{Log}[c+d\,x]}{a+b\,x^4}\,dx$$

Optimal (type 4, 530 leaves, 23 steps):

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

Result (type 4, 473 leaves):

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

Problem 297: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x\,\text{Log}[c+d\,x]}{a+b\,x^4}\,dx$$

Optimal (type 4, 473 leaves, 18 steps):

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

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

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

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

Result (type 4, 343 leaves):

$$-\frac{1}{4\sqrt{a}\,\sqrt{b}}$$

$$i\left(\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}(c+d\,x)}{b^{1/4}c-(-1)^{1/4}a^{1/4}d}\right]+\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}(c+d\,x)}{b^{1/4}c+(-1)^{1/4}a^{1/4}d}\right]-\right.$$

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

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

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

Problem 298: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 537 leaves, 23 steps):

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

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

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

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

Result (type 4, 416 leaves):

$$\frac{1}{4\,a^{3/2}}\left(-\frac{2\sqrt{a}\,\left(c\,d\,x+d^2\,x^2\,\mathrm{Log}[x]+\left(c^2-d^2\,x^2\right)\,\mathrm{Log}[c+d\,x]\right)}{c^2\,x^2}+\right.$$

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

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

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

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

Problem 299: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^4\,\mathrm{Log}[c+d\,x]}{a+b\,x^4}\,dx$$

Optimal (type 4, 521 leaves, 22 steps):

$$-\frac{x}{b}+\frac{(c+d x)\,\text{Log}[c+d x]}{b d}+\frac{\sqrt{-\sqrt{-a}}\;\text{Log}\left[\frac{d\left(\sqrt{-\sqrt{-a}}-b^{1/4} x\right)}{b^{1/4} c+\sqrt{-\sqrt{-a}}\; d}\right]\text{Log}[c+d x]}{4 b^{5/4}}+$$

$$\frac{(-a)^{1/4}\,\text{Log}\left[\frac{d\left((-a)^{1/4}-b^{1/4} x\right)}{b^{1/4} c+(-a)^{1/4} d}\right]\text{Log}[c+d x]}{4 b^{5/4}}-\frac{\sqrt{-\sqrt{-a}}\;\text{Log}\left[-\frac{d\left(\sqrt{-\sqrt{-a}}+b^{1/4} x\right)}{b^{1/4} c-\sqrt{-\sqrt{-a}}\; d}\right]\text{Log}[c+d x]}{4 b^{5/4}}-$$

$$\frac{(-a)^{1/4}\,\text{Log}\left[-\frac{d\left((-a)^{1/4}+b^{1/4} x\right)}{b^{1/4} c-(-a)^{1/4} d}\right]\text{Log}[c+d x]}{4 b^{5/4}}-$$

$$\frac{\sqrt{-\sqrt{-a}}\;\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c-\sqrt{-\sqrt{-a}}\; d}\right]}{4 b^{5/4}}+\frac{\sqrt{-\sqrt{-a}}\;\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c+\sqrt{-\sqrt{-a}}\; d}\right]}{4 b^{5/4}}-$$

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

Result (type 4, 470 leaves):

$$\frac{1}{4 b^{5/4} d}(-1)^{3/4}$$

$$\Bigg(4(-1)^{1/4} b^{1/4} c+4(-1)^{1/4} b^{1/4} d x-4(-1)^{1/4} b^{1/4} c\,\text{Log}[c+d x]-4(-1)^{1/4} b^{1/4} d x\,\text{Log}[c+d x]+$$

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

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

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

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

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

Problem 300: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^2\,\text{Log}[c+d x]}{a+b x^4}\,dx$$

Optimal (type 4, 497 leaves, 18 steps):

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

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

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

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

Result (type 4, 357 leaves):

$$\frac{1}{4\,a^{1/4}\,b^{3/4}}$$

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

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

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

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

Problem 301: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}[c+d\,x]}{a+b\,x^4}\,dx$$

Optimal (type 4, 497 leaves, 18 steps):

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

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

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

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

Result (type 4, 357 leaves):

$$\frac{1}{4\,a^{3/4}\,b^{1/4}}\,(-1)^{3/4}$$

$$\left(-i\,\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}(c+d\,x)}{b^{1/4}c-(-1)^{1/4}a^{1/4}d}\right]+i\,\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}(c+d\,x)}{b^{1/4}c+(-1)^{1/4}a^{1/4}d}\right]+\right.$$

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

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

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

Problem 302: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 536 leaves, 24 steps):

$$\frac{d\,\text{Log}[x]}{a\,c}-\frac{d\,\text{Log}[c+d\,x]}{a\,c}-\frac{\text{Log}[c+d\,x]}{a\,x}+\frac{b^{1/4}\,\text{Log}\left[\frac{d\left(\sqrt{-\sqrt{-a}}-b^{1/4}\,x\right)}{b^{1/4}\,c+\sqrt{-\sqrt{-a}}\,d}\right]\,\text{Log}[c+d\,x]}{4\left(-\sqrt{-a}\right)^{5/2}}+$$

$$\frac{b^{1/4}\,\text{Log}\left[\frac{d\left((-a)^{1/4}-b^{1/4}\,x\right)}{b^{1/4}\,c+(-a)^{1/4}\,d}\right]\,\text{Log}[c+d\,x]}{4\,(-a)^{5/4}}-\frac{b^{1/4}\,\text{Log}\left[-\frac{d\left(\sqrt{-\sqrt{-a}}+b^{1/4}\,x\right)}{b^{1/4}\,c-\sqrt{-\sqrt{-a}}\,d}\right]\,\text{Log}[c+d\,x]}{4\left(-\sqrt{-a}\right)^{5/2}}-$$

$$\frac{b^{1/4}\,\text{Log}\left[-\frac{d\left((-a)^{1/4}+b^{1/4}\,x\right)}{b^{1/4}\,c-(-a)^{1/4}\,d}\right]\,\text{Log}[c+d\,x]}{4\,(-a)^{5/4}}-\frac{b^{1/4}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-\sqrt{-\sqrt{-a}}\,d}\right]}{4\left(-\sqrt{-a}\right)^{5/2}}+$$

$$\frac{b^{1/4}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+\sqrt{-\sqrt{-a}}\,d}\right]}{4\left(-\sqrt{-a}\right)^{5/2}}-\frac{b^{1/4}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-a)^{1/4}\,d}\right]}{4\,(-a)^{5/4}}+\frac{b^{1/4}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-a)^{1/4}\,d}\right]}{4\,(-a)^{5/4}}$$

Result (type 4, 412 leaves):

$$\frac{1}{4\,a^{5/4}}\left(\frac{4\,a^{1/4}\,\left(d\,x\,\text{Log}[x]-(c+d\,x)\,\text{Log}[c+d\,x]\right)}{c\,x}-\right.$$

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

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

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

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

Problem 309: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 247 leaves, 12 steps):

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

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

Result (type 4, 205 leaves):

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

Problem 310: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^5\,(a+b\,\text{Log}[c\,(d+e x)^n])^2}{f+g x^2}\,dx$$

Optimal (type 4, 831 leaves, 28 steps):

$$-\frac{2 a b d f n x}{e g^2}+\frac{2 b^2 d f n^2 x}{e g^2}-\frac{2 b^2 d^3 n^2 x}{e^3 g}-\frac{b^2 f n^2 (d+e x)^2}{4 e^2 g^2}+\frac{3 b^2 d^2 n^2 (d+e x)^2}{4 e^4 g}-\frac{2 b^2 d n^2 (d+e x)^3}{9 e^4 g}+\frac{b^2 n^2 (d+e x)^4}{32 e^4 g}+\frac{b^2 d^4 n^2 \text{Log}[d+e x]^2}{4 e^4 g}-\frac{2 b^2 d f n (d+e x)\,\text{Log}[c (d+e x)^n]}{e^2 g^2}+\frac{2 b d^3 n (d+e x)\,(a+b\,\text{Log}[c (d+e x)^n])}{e^4 g}+\frac{b f n (d+e x)^2\,(a+b\,\text{Log}[c (d+e x)^n])}{2 e^2 g^2}-\frac{3 b d^2 n (d+e x)^2\,(a+b\,\text{Log}[c (d+e x)^n])}{2 e^4 g}+\frac{2 b d n (d+e x)^3\,(a+b\,\text{Log}[c (d+e x)^n])}{3 e^4 g}-\frac{b n (d+e x)^4\,(a+b\,\text{Log}[c (d+e x)^n])}{8 e^4 g}-\frac{b d^4 n\,\text{Log}[d+e x]\,(a+b\,\text{Log}[c (d+e x)^n])}{2 e^4 g}+\frac{x^4\,(a+b\,\text{Log}[c (d+e x)^n])^2}{4 g}+\frac{d f (d+e x)\,(a+b\,\text{Log}[c (d+e x)^n])^2}{e^2 g^2}-\frac{f (d+e x)^2\,(a+b\,\text{Log}[c (d+e x)^n])^2}{2 e^2 g^2}+\frac{f^2 (a+b\,\text{Log}[c (d+e x)^n])^2\,\text{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right]}{2 g^3}+\frac{f^2 (a+b\,\text{Log}[c (d+e x)^n])^2\,\text{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right]}{2 g^3}+\frac{b f^2 n (a+b\,\text{Log}[c (d+e x)^n])\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e x)}{e\sqrt{-f}-d\sqrt{g}}\right]}{g^3}+\frac{b f^2 n (a+b\,\text{Log}[c (d+e x)^n])\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e x)}{e\sqrt{-f}+d\sqrt{g}}\right]}{g^3}-\frac{b^2 f^2 n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,(d+e x)}{e\sqrt{-f}-d\sqrt{g}}\right]}{g^3}-\frac{b^2 f^2 n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e x)}{e\sqrt{-f}+d\sqrt{g}}\right]}{g^3}$$

Result (type 4, 861 leaves):

$$-\frac{1}{288\, e^4\, g^3}\Bigg(144\, e^4\, f\, g\, x^2\, \left(a-b\, n\, \text{Log}[d+e\, x]+b\, \text{Log}\left[c\, (d+e\, x)^n\right]\right)^2-$$

$$72\, e^4\, g^2\, x^4\, \left(a-b\, n\, \text{Log}[d+e\, x]+b\, \text{Log}\left[c\, (d+e\, x)^n\right]\right)^2-$$

$$144\, e^4\, f^2\, \left(a-b\, n\, \text{Log}[d+e\, x]+b\, \text{Log}\left[c\, (d+e\, x)^n\right]\right)^2\, \text{Log}\left[f+g\, x^2\right]+$$

$$12\, b\, n\, \left(a-b\, n\, \text{Log}[d+e\, x]+b\, \text{Log}\left[c\, (d+e\, x)^n\right]\right)$$

$$\Bigg(12\, e^2\, f\, g\, \left(e\, x\, (2\, d-e\, x)-2\, \left(d^2-e^2\, x^2\right)\, \text{Log}[d+e\, x]\right)+$$

$$g^2\, \left(e\, x\, \left(-12\, d^3+6\, d^2\, e\, x-4\, d\, e^2\, x^2+3\, e^3\, x^3\right)+12\, \left(d^4-e^4\, x^4\right)\, \text{Log}[d+e\, x]\right)-$$

$$24\, e^4\, f^2\, \left(\text{Log}[d+e\, x]\, \text{Log}\left[1-\frac{\sqrt{g}\, (d+e\, x)}{-\mathrm{i}\, e\, \sqrt{f}+d\, \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\, (d+e\, x)}{-\mathrm{i}\, e\, \sqrt{f}+d\, \sqrt{g}}\right]\right)-$$

$$24\, e^4\, f^2\, \left(\text{Log}[d+e\, x]\, \text{Log}\left[1-\frac{\sqrt{g}\, (d+e\, x)}{\mathrm{i}\, e\, \sqrt{f}+d\, \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\, (d+e\, x)}{\mathrm{i}\, e\, \sqrt{f}+d\, \sqrt{g}}\right]\right)\Bigg)+b^2\, n^2$$

$$\Bigg(72\, e^2\, f\, g\, \left(e\, x\, (-6\, d+e\, x)+\left(6\, d^2+4\, d\, e\, x-2\, e^2\, x^2\right)\, \text{Log}[d+e\, x]-2\, \left(d^2-e^2\, x^2\right)\, \text{Log}[d+e\, x]^2\right)+$$

$$g^2\, \Big(e\, x\, \left(300\, d^3-78\, d^2\, e\, x+28\, d\, e^2\, x^2-9\, e^3\, x^3\right)-12\, \big(25\, d^4+12\, d^3\, e\, x-6\, d^2\, e^2\, x^2+$$

$$4\, d\, e^3\, x^3-3\, e^4\, x^4\big)\, \text{Log}[d+e\, x]+72\, \left(d^4-e^4\, x^4\right)\, \text{Log}[d+e\, x]^2\Big)-144\, e^4\, f^2$$

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

$$\left.2\, \text{PolyLog}\left[3,\frac{\sqrt{g}\, (d+e\, x)}{-\mathrm{i}\, e\, \sqrt{f}+d\, \sqrt{g}}\right]\right)-144\, e^4\, f^2\, \left(\text{Log}[d+e\, x]^2\, \text{Log}\left[1-\frac{\sqrt{g}\, (d+e\, x)}{\mathrm{i}\, e\, \sqrt{f}+d\, \sqrt{g}}\right]+\right.$$

$$\left.2\, \text{Log}[d+e\, x]\, \text{PolyLog}\left[2,\frac{\sqrt{g}\, (d+e\, x)}{\mathrm{i}\, e\, \sqrt{f}+d\, \sqrt{g}}\right]-2\, \text{PolyLog}\left[3,\frac{\sqrt{g}\, (d+e\, x)}{\mathrm{i}\, e\, \sqrt{f}+d\, \sqrt{g}}\right]\right)\Bigg)\Bigg)$$

Problem 311: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 499 leaves, 21 steps):

$$\frac{2abdnx}{eg}-\frac{2b^2dn^2x}{eg}+\frac{b^2n^2(d+ex)^2}{4e^2g}+\frac{2b^2dn(d+ex)\,\text{Log}[c(d+ex)^n]}{e^2g}-\frac{bn(d+ex)^2(a+b\,\text{Log}[c(d+ex)^n])}{2e^2g}-\frac{d(d+ex)(a+b\,\text{Log}[c(d+ex)^n])^2}{e^2g}+\frac{(d+ex)^2(a+b\,\text{Log}[c(d+ex)^n])^2}{2e^2g}-\frac{f(a+b\,\text{Log}[c(d+ex)^n])^2\,\text{Log}\left[\frac{e(\sqrt{-f}-\sqrt{g}\,x)}{e\sqrt{-f}+d\sqrt{g}}\right]}{2g^2}-\frac{f(a+b\,\text{Log}[c(d+ex)^n])^2\,\text{Log}\left[\frac{e(\sqrt{-f}+\sqrt{g}\,x)}{e\sqrt{-f}-d\sqrt{g}}\right]}{2g^2}-\frac{bfn(a+b\,\text{Log}[c(d+ex)^n])\,\text{PolyLog}\left[2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right]}{g^2}-\frac{bfn(a+b\,\text{Log}[c(d+ex)^n])\,\text{PolyLog}\left[2,\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right]}{g^2}+\frac{b^2fn^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right]}{g^2}+\frac{b^2fn^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}+d\sqrt{g}}\right]}{g^2}$$

Result (type 4, 635 leaves) :

$$\frac{1}{4e^2g^2}\Bigg(2e^2gx^2(a-bn\,\text{Log}[d+ex]+b\,\text{Log}[c(d+ex)^n])^2-2e^2f(a-bn\,\text{Log}[d+ex]+b\,\text{Log}[c(d+ex)^n])^2\,\text{Log}[f+gx^2]+2bn(a-bn\,\text{Log}[d+ex]+b\,\text{Log}[c(d+ex)^n])\Bigg(egx(2d-ex)-2g(d^2-e^2x^2)\,\text{Log}[d+ex]-2e^2f\left(\text{Log}[d+ex]\,\text{Log}\left[1-\frac{\sqrt{g}(d+ex)}{-i e\sqrt{f}+d\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right]\right)-2e^2f\left(\text{Log}[d+ex]\,\text{Log}\left[1-\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right]\right)\Bigg)+b^2n^2\Bigg(g\left(ex(-6d+ex)+(6d^2+4dex-2e^2x^2)\,\text{Log}[d+ex]-2(d^2-e^2x^2)\,\text{Log}[d+ex]^2\right)-2e^2f\left(\text{Log}[d+ex]^2\,\text{Log}\left[1-\frac{\sqrt{g}(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right]+2\,\text{Log}[d+ex]\,\text{PolyLog}\left[2,\frac{\sqrt{g}(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}(d+ex)}{-ie\sqrt{f}+d\sqrt{g}}\right]\right)-2e^2f\left(\text{Log}[d+ex]^2\,\text{Log}\left[1-\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right]+2\,\text{Log}[d+ex]\,\text{PolyLog}\left[2,\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}(d+ex)}{ie\sqrt{f}+d\sqrt{g}}\right]\right)\Bigg)\Bigg)$$

Problem 312: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 317 leaves, 10 steps):

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

Result (type 4, 464 leaves):

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

Problem 313: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 397 leaves, 16 steps):

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

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

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

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

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

Result (type 4, 584 leaves):

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

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

$$\left(-2 \text{Log}[x] \text{Log}[d+e x]+2 \text{Log}[x] \text{Log}\left[1+\frac{e x}{d}\right]+\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\right.$$

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

$$\left.\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)+$$

$$b^2 n^2 \left(-2 \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]^2+\text{Log}[d+e x]^2 \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\right.$$

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

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

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

Problem 314: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 551 leaves, 23 steps):

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

Result (type 4, 801 leaves):

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

Problem 315: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^4\,(a+b\,\text{Log}[c\,(d+e x)^n])^2}{f+g x^2}\,dx$$

Optimal (type 4, 701 leaves, 23 steps):

$$\frac{2\,a\,b\,f\,n\,x}{g^2}-\frac{2\,b^2\,f\,n^2\,x}{g^2}+\frac{2\,b^2\,d^2\,n^2\,x}{e^2\,g}-\frac{b^2\,d\,n^2\,(d+e\,x)^2}{2\,e^3\,g}+\frac{2\,b^2\,n^2\,(d+e\,x)^3}{27\,e^3\,g}-\frac{b^2\,d^3\,n^2\,\text{Log}[d+e\,x]^2}{3\,e^3\,g}+$$

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

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

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

$$\frac{f\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{e\,g^2}+\frac{(-f)^{3/2}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,g^{5/2}}-$$

$$\frac{(-f)^{3/2}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,g^{5/2}}-$$

$$\frac{b\,(-f)^{3/2}\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g^{5/2}}+$$

$$\frac{b\,(-f)^{3/2}\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g^{5/2}}+$$

$$\frac{b^2\,(-f)^{3/2}\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g^{5/2}}-\frac{b^2\,(-f)^{3/2}\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g^{5/2}}$$

Result (type 4, 816 leaves) :

$$\frac{1}{54\,e^3\,g^{5/2}}\left(-54\,e^3\,f\,\sqrt{g}\,x\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2+\right.$$
$$18\,e^3\,g^{3/2}\,x^3\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2+$$
$$54\,e^3\,f^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2+$$
$$6\,b\,n\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\left(-18\,e^2\,f\,\sqrt{g}\,(d+e\,x)\,(-1+\text{Log}[d+e\,x])+\right.$$
$$g^{3/2}\,\left(e\,x\,\left(-6\,d^2+3\,d\,e\,x-2\,e^2\,x^2\right)+6\,\left(d^3+e^3\,x^3\right)\,\text{Log}[d+e\,x]\right)+$$
$$9\,i\,e^3\,f^{3/2}\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)-$$
$$\left.9\,i\,e^3\,f^{3/2}\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)+$$
$$i\,b^2\,n^2\,\left(54\,i\,e^2\,f\,\sqrt{g}\,(d+e\,x)\,\left(2-2\,\text{Log}[d+e\,x]+\text{Log}[d+e\,x]^2\right)+\right.$$
$$i\,g^{3/2}\,\left(e\,x\,\left(-66\,d^2+15\,d\,e\,x-4\,e^2\,x^2\right)+6\,\left(11\,d^3+6\,d^2\,e\,x-3\,d\,e^2\,x^2+2\,e^3\,x^3\right)\,\text{Log}[d+e\,x]-\right.$$
$$\left.18\,\left(d^3+e^3\,x^3\right)\,\text{Log}[d+e\,x]^2\right)+27\,e^3\,f^{3/2}\,\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\right.$$
$$\left.2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)-$$
$$27\,e^3\,f^{3/2}\,\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+2\,\text{Log}[d+e\,x]\right.$$
$$\left.\left.\left.\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)\right)$$

Problem 316: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 447 leaves, 16 steps):

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

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

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

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

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

$$\frac{b^2\,\sqrt{-f}\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g^{3/2}}-\frac{b^2\,\sqrt{-f}\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g^{3/2}}$$

Result (type 4, 614 leaves):

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

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

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

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

$$\left.e\,\sqrt{f}\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)+$$

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

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

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

$$\left.\left.\left.2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)\right)$$

Problem 317: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 371 leaves, 10 steps):

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

Result (type 4, 485 leaves):

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

Problem 318: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 461 leaves, 15 steps):

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

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

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

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

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

$$\frac{b^2\,\sqrt{g}\,n^2\,\text{PolyLog}\left[3,\,-\frac{\sqrt{g}\,\left(d+e\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{\left(-f\right)^{3/2}}-\frac{b^2\,\sqrt{g}\,n^2\,\text{PolyLog}\left[3,\,\frac{\sqrt{g}\,\left(d+e\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{\left(-f\right)^{3/2}}$$

Result (type 4, 654 leaves) :

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

Problem 319: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)^2}{x^4\,\left(f+g\,x^2\right)}\,dx$$

Optimal (type 4, 694 leaves, 26 steps):

$$-\frac{b^2 e^2 n^2}{3 d^2 f x}-\frac{b^2 e^3 n^2 \operatorname{Log}[x]}{d^3 f}+\frac{b^2 e^3 n^2 \operatorname{Log}[d+e x]}{3 d^3 f}-$$

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

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

$$\frac{g (d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{d f^2 x}+\frac{g^{3/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 (-f)^{5/2}}-$$

$$\frac{g^{3/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 (-f)^{5/2}}+\frac{2 b e^3 n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[1-\frac{d}{d+e x}\right]}{3 d^3 f}-$$

$$\frac{2 b^2 e^3 n^2 \operatorname{PolyLog}\left[2, \frac{d}{d+e x}\right]}{3 d^3 f}-\frac{b g^{3/2} n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[2, -\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{(-f)^{5/2}}+$$

$$\frac{b g^{3/2} n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{(-f)^{5/2}}-\frac{2 b^2 e g n^2 \operatorname{PolyLog}\left[2, 1+\frac{e x}{d}\right]}{d f^2}+$$

$$\frac{b^2 g^{3/2} n^2 \operatorname{PolyLog}\left[3, -\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{(-f)^{5/2}}-\frac{b^2 g^{3/2} n^2 \operatorname{PolyLog}\left[3, \frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{(-f)^{5/2}}$$

Result (type 4, 886 leaves) :

$$\frac{1}{6 d^3 f^{5/2} x^3}\left(-2 d^3 f^{3/2} \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2+\right.$$
$$6 d^3 \sqrt{f} g x^2 \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2+$$
$$6 d^3 g^{3/2} x^3 \text{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right] \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2+2 i b n$$
$$\left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right) \left(6 i d^2 \sqrt{f} g x^2 \left(e x \text{Log}[x]-(d+e x) \text{Log}[d+e x]\right)+\right.$$
$$i f^{3/2} \left(d e x (d-2 e x)-2 e^3 x^3 \text{Log}[x]+2 \left(d^3+e^3 x^3\right) \text{Log}[d+e x]\right)+$$
$$3 d^3 g^{3/2} x^3 \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)-$$
$$\left.3 d^3 g^{3/2} x^3 \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)-$$
$$b^2 n^2 \left(6 d^2 \sqrt{f} g x^2 \left(2 e x \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]-(d+e x) \text{Log}[d+e x]^2+\right.\right.$$
$$\left.2 e x \text{PolyLog}\left[2,1+\frac{e x}{d}\right]\right)-2 f^{3/2} \left(e^3 x^3 \text{Log}\left[-\frac{e x}{d}\right] (-3+2 \text{Log}[d+e x])-\right.$$
$$(d+e x) \left(e^2 x^2+e x (d-3 e x) \text{Log}[d+e x]+\left(d^2-d e x+e^2 x^2\right) \text{Log}[d+e x]^2\right)+$$
$$\left.2 e^3 x^3 \text{PolyLog}\left[2,1+\frac{e x}{d}\right]\right)-3 i d^3 g^{3/2} x^3 \left(\text{Log}[d+e x]^2 \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\right.$$
$$\left.2 \text{Log}[d+e x] \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]-2 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)+$$
$$3 i d^3 g^{3/2} x^3 \left(\text{Log}[d+e x]^2 \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\right.$$
$$\left.\left.\left.2 \text{Log}[d+e x] \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]-2 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)\right)$$

Problem 320: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^5 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{\left(f+g x^2\right)^2} \, dx$$

Optimal (type 4, 936 leaves, 34 steps):

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

Result (type 4, 1272 leaves):

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

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

$$\left(f^{3/2}\left(2\,e\,\left(-i\,\sqrt{f}+\sqrt{g}\,x\right)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]+2\,i\,\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]-\right.\right.$$

$$\left.\left.e\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\,\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\,\sqrt{f}-i\,d\,\sqrt{g}\right)\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\right)+$$

$$\left(i\,f^{3/2}\left(2\,e\,\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\,\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+\right.\right.$$

$$\left.\left.e\,\left(i\,\sqrt{f}+\sqrt{g}\,x\right)\,\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\,\sqrt{f}+i\,d\,\sqrt{g}\right)\,\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\right)-$$

$$8\,f\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)-$$

$$\left.8\,f\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)+$$

$$b^2\,n^2\left(\frac{1}{e^2}g\,\left(e\,x\,(-6\,d+e\,x)+\left(6\,d^2+4\,d\,e\,x-2\,e^2\,x^2\right)\,\text{Log}[d+e\,x]-2\,\left(d^2-e^2\,x^2\right)\,\text{Log}[d+e\,x]^2\right)+\right.$$

$$\left(i\,f^{3/2}\left(-\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]^2+2\,e\,\left(i\,\sqrt{f}+\sqrt{g}\,x\right)\,\text{Log}[d+e\,x]\right.\right.$$

$$\left.\left.\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+2\,e\,\left(i\,\sqrt{f}+\sqrt{g}\,x\right)\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)\Big/$$

$$\left(\left(e\,\sqrt{f}+i\,d\,\sqrt{g}\right)\,\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\right)-\left(f^{3/2}\left(\text{Log}[d+e\,x]\right.\right.$$

$$\left(-i\,\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+2\,e\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)+$$

$$\left.\left.2\,e\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)\Big/$$

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

$$\left.2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)-$$

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

$$\left.\left.\left.2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)\right)$$

Problem 321: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 739 leaves, 25 steps):

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

Result (type 4, 1124 leaves):

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

Problem 322: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 430 leaves, 13 steps):

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

Result (type 4, 544 leaves):

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

Problem 323: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 814 leaves, 29 steps):

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

Result (type 4, 1235 leaves):

$$\frac{1}{4 f^2}\left(\frac{2 f \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{f+g x^2}+\right.$$
$$4 \text{Log}[x] \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2-$$
$$2 \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[f+g x^2\right]+$$
$$b n \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right) \left(8 \text{Log}[x] \left(\text{Log}[d+e x]-\text{Log}\left[1+\frac{e x}{d}\right]\right)+\right.$$
$$\left(\sqrt{f} \left(2 \mathrm{i} e \left(\sqrt{f}+\mathrm{i} \sqrt{g} x\right) \text{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]-2 \mathrm{i} \sqrt{g} (d+e x) \text{Log}[d+e x]+\right.\right.$$
$$\left.\left.e \left(\sqrt{f}+\mathrm{i} \sqrt{g} x\right) \text{Log}\left[f+g x^2\right]\right)\right) \Big/ \left(\left(e \sqrt{f}-\mathrm{i} d \sqrt{g}\right) \left(\sqrt{f}+\mathrm{i} \sqrt{g} x\right)\right)-$$
$$\left(\mathrm{i} \sqrt{f} \left(2 e \left(\sqrt{f}-\mathrm{i} \sqrt{g} x\right) \text{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]-2 \sqrt{g} (d+e x) \text{Log}[d+e x]+e \left(\mathrm{i} \sqrt{f}+\sqrt{g} x\right)\right.\right.$$
$$\left.\left.\text{Log}\left[f+g x^2\right]\right)\right) \Big/ \left(\left(e \sqrt{f}+\mathrm{i} d \sqrt{g}\right) \left(\sqrt{f}-\mathrm{i} \sqrt{g} x\right)\right)-8 \text{PolyLog}\left[2,-\frac{e x}{d}\right]-$$
$$4 \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]\right)-$$
$$\left.4 \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]\right)\right)+$$
$$b^2 n^2 \left(4 \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]^2-2 \text{Log}[d+e x]^2 \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]-\right.$$
$$2 \text{Log}[d+e x]^2 \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]-4 \text{Log}[d+e x] \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+$$
$$\left(\sqrt{f} \left(\text{Log}[d+e x] \left(\mathrm{i} \sqrt{g} (d+e x) \text{Log}[d+e x]+2 e \left(\sqrt{f}-\mathrm{i} \sqrt{g} x\right) \text{Log}\left[\right.\right.\right.\right.$$
$$\left.\left.\left.\left.1-\frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]\right)+2 e \left(\sqrt{f}-\mathrm{i} \sqrt{g} x\right) \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]\right)\right) \Big/$$
$$\left(\left(e \sqrt{f}+\mathrm{i} d \sqrt{g}\right) \left(\sqrt{f}-\mathrm{i} \sqrt{g} x\right)\right)-4 \text{Log}[d+e x] \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+$$
$$\left(\sqrt{f} \left(\text{Log}[d+e x] \left(-\mathrm{i} \sqrt{g} (d+e x) \text{Log}[d+e x]+2 e \left(\sqrt{f}+\mathrm{i} \sqrt{g} x\right) \text{Log}\left[\right.\right.\right.\right.$$
$$\left.\left.\left.\left.1-\frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]\right)+2 e \left(\sqrt{f}+\mathrm{i} \sqrt{g} x\right) \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]\right)\right) \Big/$$
$$\left(\left(e \sqrt{f}-\mathrm{i} d \sqrt{g}\right) \left(\sqrt{f}+\mathrm{i} \sqrt{g} x\right)\right)+8 \text{Log}[d+e x] \text{PolyLog}\left[2,1+\frac{e x}{d}\right]+$$
$$\left.\left.4 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+4 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]-8 \text{PolyLog}\left[3,1+\frac{e x}{d}\right]\right)\right)$$

Problem 324: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 970 leaves, 36 steps):

$$\frac{b^2 e^2 n^2 \text{Log}[x]}{d^2 f^2}-\frac{b\,e\,n\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{d^2 f^2 x}+\frac{e^2 g\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{2 f^2\,\left(e^2 f+d^2 g\right)}-$$
$$\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{2 f^2 x^2}-\frac{g\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{2 f^2\,\left(f+g\,x^2\right)}-\frac{2\,g\,\text{Log}\left[-\frac{e\,x}{d}\right]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{f^3}-$$
$$\frac{b\,e\,\left(e\,f+d\,\sqrt{-f}\,\sqrt{g}\right)\,g\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2 f^3\,\left(e^2 f+d^2 g\right)}+$$
$$\frac{g\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{f^3}-$$
$$\frac{b\,e\,\left(e\,f-d\,\sqrt{-f}\,\sqrt{g}\right)\,g\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2 f^3\,\left(e^2 f+d^2 g\right)}+$$
$$\frac{g\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{f^3}-\frac{b\,e^2 n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[1-\frac{d}{d+e\,x}\right]}{d^2 f^2}+$$
$$\frac{b^2 e^2 n^2\,\text{PolyLog}\left[2,\,\frac{d}{d+e\,x}\right]}{d^2 f^2}-\frac{b^2 e\,\left(e\,\sqrt{-f}+d\,\sqrt{g}\right)\,g\,n^2\,\text{PolyLog}\left[2,\,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,(-f)^{5/2}\,\left(e^2 f+d^2 g\right)}+$$
$$\frac{2\,b\,g\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,\,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{f^3}-$$
$$\frac{b^2 e\,\left(e\,f+d\,\sqrt{-f}\,\sqrt{g}\right)\,g\,n^2\,\text{PolyLog}\left[2,\,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2 f^3\,\left(e^2 f+d^2 g\right)}+$$
$$\frac{2\,b\,g\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,\,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{f^3}-$$
$$\frac{4\,b\,g\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,\,1+\frac{e\,x}{d}\right]}{f^3}-\frac{2\,b^2 g\,n^2\,\text{PolyLog}\left[3,\,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{f^3}-$$
$$\frac{2\,b^2 g\,n^2\,\text{PolyLog}\left[3,\,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{f^3}+\frac{4\,b^2 g\,n^2\,\text{PolyLog}\left[3,\,1+\frac{e\,x}{d}\right]}{f^3}$$

Result (type 4, 1416 leaves):

$$\frac{1}{4 f^3}\left(-\frac{2 f \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{x^2}-\frac{2 f g \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{f+g x^2}-8 g \text{Log}[x] \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2+4 g \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[f+g x^2\right]+b n \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)\left(-\frac{4 f \left(d e x+e^2 x^2 \text{Log}[x]+\left(d^2-e^2 x^2\right) \text{Log}[d+e x]\right)}{d^2 x^2}+\left(\sqrt{f} g \left(2 e \left(-i \sqrt{f}+\sqrt{g} x\right) \text{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]+2 i \sqrt{g} (d+e x) \text{Log}[d+e x]-e \left(\sqrt{f}+i \sqrt{g} x\right) \text{Log}\left[f+g x^2\right]\right)\right)\Big/\left(\left(e \sqrt{f}-i d \sqrt{g}\right) \left(\sqrt{f}+i \sqrt{g} x\right)\right)+\left(i \sqrt{f} g \left(2 e \left(\sqrt{f}-i \sqrt{g} x\right) \text{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]-2 \sqrt{g} (d+e x) \text{Log}[d+e x]+e \left(i \sqrt{f}+\sqrt{g} x\right) \text{Log}\left[f+g x^2\right]\right)\right)\Big/\left(\left(e \sqrt{f}+i d \sqrt{g}\right) \left(\sqrt{f}-i \sqrt{g} x\right)\right)-16 g \left(\text{Log}[x] \left(\text{Log}[d+e x]-\text{Log}\left[1+\frac{e x}{d}\right]\right)-\text{PolyLog}\left[2,-\frac{e x}{d}\right]\right)+8 g \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)+8 g \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)+b^2 n^2 \left(\left(i \sqrt{f} g \left(-\sqrt{g} (d+e x) \text{Log}[d+e x]^2+2 e \left(i \sqrt{f}+\sqrt{g} x\right) \text{Log}[d+e x]\text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+2 e \left(i \sqrt{f}+\sqrt{g} x\right) \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)\Big/\left(\left(e \sqrt{f}+i d \sqrt{g}\right) \left(\sqrt{f}-i \sqrt{g} x\right)\right)-\left(\sqrt{f} g \left(\text{Log}[d+e x]\left(-i \sqrt{g} (d+e x) \text{Log}[d+e x]+2 e \left(\sqrt{f}+i \sqrt{g} x\right) \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)+2 e \left(\sqrt{f}+i \sqrt{g} x\right) \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)\Big/\left(\left(e \sqrt{f}-i d \sqrt{g}\right) \left(\sqrt{f}+i \sqrt{g} x\right)\right)-\frac{1}{d^2 x^2}2 f \left(2 e^2 x^2 \text{Log}\left[-\frac{e x}{d}\right] (-1+\text{Log}[d+e x])+(d+e x) \text{Log}[d+e x] (2 e x+(d-e x) \text{Log}[d+e x])+2 e^2 x^2 \text{PolyLog}\left[2,1+\frac{e x}{d}\right]\right)+$$

$$4\,g\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-\mathrm{i}\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-\mathrm{i}\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{-\mathrm{i}\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)+4\,g\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{\mathrm{i}\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{\mathrm{i}\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{\mathrm{i}\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)-8\,g\left(\text{Log}\left[-\frac{e\,x}{d}\right]\text{Log}[d+e\,x]^2+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]-2\,\text{PolyLog}\left[3,1+\frac{e\,x}{d}\right]\right)\Bigg)\Bigg)$$

Problem 325: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^4\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{\left(f+g\,x^2\right)^2}\,dx$$

Optimal (type 4, 897 leaves, 36 steps):

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

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

$$\frac{f (d+e x)\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{4\left(e \sqrt{-f}-d \sqrt{g}\right) g^2\left(\sqrt{-f}+\sqrt{g} x\right)}-\frac{b e f n\left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2\left(e \sqrt{-f}+d \sqrt{g}\right) g^{5/2}}+$$

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

$$\frac{b e f n\left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2\left(e \sqrt{-f}-d \sqrt{g}\right) g^{5/2}}-$$

$$\frac{3 \sqrt{-f}\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{4 g^{5/2}}+\frac{b^2 e f n^2 \text{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2\left(e \sqrt{-f}-d \sqrt{g}\right) g^{5/2}}-$$

$$\frac{3 b \sqrt{-f} n\left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 g^{5/2}}-$$

$$\frac{b^2 e f n^2 \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2\left(e \sqrt{-f}+d \sqrt{g}\right) g^{5/2}}+\frac{3 b \sqrt{-f} n\left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 g^{5/2}}+$$

$$\frac{3 b^2 \sqrt{-f} n^2 \text{PolyLog}\left[3,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 g^{5/2}}-\frac{3 b^2 \sqrt{-f} n^2 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 g^{5/2}}$$

Result (type 4, 1247 leaves):

$$\frac{1}{4 g^{5/2}}\left(4 \sqrt{g} x\left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2+\right.$$

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

$$6 \sqrt{f} \text{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]\left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2+$$

$$b n\left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)\left(\frac{8 \sqrt{g} (d+e x)(-1+\text{Log}[d+e x])}{e}+\right.$$

$$\left(f\left(-2 e\left(\sqrt{f}+i \sqrt{g} x\right) \text{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]+2 \sqrt{g}(d+e x) \text{Log}[d+e x]+\right.\right.$$

$$\left.\left.\left.\mathrm{i}\, e \left(\sqrt{f}+\mathrm{i}\sqrt{g}\, x\right) \mathrm{Log}\left[f+g x^2\right]\right)\right) \middle/ \left(\left(e\sqrt{f}-\mathrm{i}\, d\sqrt{g}\right)\left(\sqrt{f}+\mathrm{i}\sqrt{g}\, x\right)\right)\right. -$$

$$\left(f\left(2 e\left(\sqrt{f}-\mathrm{i}\sqrt{g}\, x\right) \mathrm{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]-2\sqrt{g}\, (d+e x) \mathrm{Log}[d+e x]+\right.\right.$$

$$\left.\left.e\left(\mathrm{i}\sqrt{f}+\sqrt{g}\, x\right) \mathrm{Log}\left[f+g x^2\right]\right)\right) \middle/ \left(\left(e\sqrt{f}+\mathrm{i}\, d\sqrt{g}\right)\left(\sqrt{f}-\mathrm{i}\sqrt{g}\, x\right)\right) -$$

$$6\,\mathrm{i}\sqrt{f}\left(\mathrm{Log}[d+e x]\,\mathrm{Log}\left[1-\frac{\sqrt{g}\,(d+e x)}{-\mathrm{i}\, e\sqrt{f}+d\sqrt{g}}\right]+\mathrm{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e x)}{-\mathrm{i}\, e\sqrt{f}+d\sqrt{g}}\right]\right)+$$

$$\left.\left.6\,\mathrm{i}\sqrt{f}\left(\mathrm{Log}[d+e x]\,\mathrm{Log}\left[1-\frac{\sqrt{g}\,(d+e x)}{\mathrm{i}\, e\sqrt{f}+d\sqrt{g}}\right]+\mathrm{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e x)}{\mathrm{i}\, e\sqrt{f}+d\sqrt{g}}\right]\right)\right)\right)+$$

$$b^2 n^2\left(\frac{4\sqrt{g}\,(d+e x)\left(2-2\,\mathrm{Log}[d+e x]+\mathrm{Log}[d+e x]^2\right)}{e}-\left(f\left(-\sqrt{g}\,(d+e x)\,\mathrm{Log}[d+e x]^2+\right.\right.\right.$$

$$2 e\left(\mathrm{i}\sqrt{f}+\sqrt{g}\, x\right)\mathrm{Log}[d+e x]\,\mathrm{Log}\left[1-\frac{\sqrt{g}\,(d+e x)}{-\mathrm{i}\, e\sqrt{f}+d\sqrt{g}}\right]+2 e\left(\mathrm{i}\sqrt{f}+\sqrt{g}\, x\right)$$

$$\left.\left.\mathrm{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e x)}{-\mathrm{i}\, e\sqrt{f}+d\sqrt{g}}\right]\right)\right) \middle/ \left(\left(e\sqrt{f}+\mathrm{i}\, d\sqrt{g}\right)\left(\sqrt{f}-\mathrm{i}\sqrt{g}\, x\right)\right)+$$

$$\left(f\,\mathrm{Log}[d+e x]\left(\sqrt{g}\,(d+e x)\,\mathrm{Log}[d+e x]+2\,\mathrm{i}\, e\left(\sqrt{f}+\mathrm{i}\sqrt{g}\, x\right)\mathrm{Log}\left[1-\frac{\sqrt{g}\,(d+e x)}{\mathrm{i}\, e\sqrt{f}+d\sqrt{g}}\right]+\right.\right.$$

$$\left.\left.2\,\mathrm{i}\, e\left(\sqrt{f}+\mathrm{i}\sqrt{g}\, x\right)\mathrm{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e x)}{\mathrm{i}\, e\sqrt{f}+d\sqrt{g}}\right]\right)\right) \Big/$$

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

$$\left.2\,\mathrm{Log}[d+e x]\,\mathrm{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e x)}{-\mathrm{i}\, e\sqrt{f}+d\sqrt{g}}\right]-2\,\mathrm{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e x)}{-\mathrm{i}\, e\sqrt{f}+d\sqrt{g}}\right]\right)+$$

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

$$\left.\left.\left.2\,\mathrm{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e x)}{\mathrm{i}\, e\sqrt{f}+d\sqrt{g}}\right]\right)\right)\right)$$

Problem 326: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 815 leaves, 32 steps):

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

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

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

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

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

$$\frac{b^2\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,\sqrt{-f}\,g^{3/2}}-\frac{b^2\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,\sqrt{-f}\,g^{3/2}}$$

Result (type 4, 1149 leaves) :

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

Problem 327: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 821 leaves, 20 steps):

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

Result (type 4, 1162 leaves):

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

$$e\left(i\sqrt{f}+\sqrt{g}\,x\right)\text{Log}\left[f+g x^2\right]\Big)\Big)\Big/\left(\left(e\sqrt{f}+i d\sqrt{g}\right)\left(\sqrt{f}-i\sqrt{g}\,x\right)\right)+$$

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

$$2 i\left(\text{Log}[d+e x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e x)}{i e\sqrt{f}+d\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e x)}{i e\sqrt{f}+d\sqrt{g}}\right]\right)\Bigg)+$$

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

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

$$2,\frac{\sqrt{g}\,(d+e x)}{-i e\sqrt{f}+d\sqrt{g}}\Bigg]\Bigg)\Bigg)\Big/\left(\left(e\sqrt{f}+i d\sqrt{g}\right)\left(\sqrt{f}-i\sqrt{g}\,x\right)\right)\Bigg)+$$

$$\Bigg(\sqrt{f}\Bigg(\text{Log}[d+e x]\Bigg(\sqrt{g}\,(d+e x)\,\text{Log}[d+e x]+2 i e\left(\sqrt{f}+i\sqrt{g}\,x\right)\text{Log}[$$

$$1-\frac{\sqrt{g}\,(d+e x)}{i e\sqrt{f}+d\sqrt{g}}\Bigg]\Bigg)+2 i e\left(\sqrt{f}+i\sqrt{g}\,x\right)\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e x)}{i e\sqrt{f}+d\sqrt{g}}\right]\Bigg)\Bigg)\Big/$$

$$\left(\left(e\sqrt{f}-i d\sqrt{g}\right)\left(\sqrt{f}+i\sqrt{g}\,x\right)\right)+i\Bigg(\text{Log}[d+e x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e x)}{-i e\sqrt{f}+d\sqrt{g}}\right]+$$

$$2\,\text{Log}[d+e x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e x)}{-i e\sqrt{f}+d\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e x)}{-i e\sqrt{f}+d\sqrt{g}}\right]\Bigg)-$$

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

$$2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e x)}{i e\sqrt{f}+d\sqrt{g}}\right]\Bigg)\Bigg)\Bigg)$$

Problem 328: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 919 leaves, 35 steps):

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

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

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

$$\frac{3\,\sqrt{g}\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{4\,\left(-f\right)^{5/2}}+$$

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

$$\frac{3\,\sqrt{g}\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{4\,\left(-f\right)^{5/2}}+\frac{b^2\,e\,\sqrt{g}\,n^2\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,\left(d+e\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,f\,\left(e\,\left(-f\right)^{3/2}+d\,f\,\sqrt{g}\right)}+$$

$$\frac{3\,b\,\sqrt{g}\,n\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,\left(d+e\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,\left(-f\right)^{5/2}}+\frac{b^2\,e\,\sqrt{g}\,n^2\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,\left(d+e\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,f^2\,\left(e\,\sqrt{-f}+d\,\sqrt{g}\right)}-$$

$$\frac{3\,b\,\sqrt{g}\,n\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,\left(d+e\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,\left(-f\right)^{5/2}}+\frac{2\,b^2\,e\,n^2\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{d\,f^2}-$$

$$\frac{3\,b^2\,\sqrt{g}\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,\left(d+e\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,\left(-f\right)^{5/2}}+\frac{3\,b^2\,\sqrt{g}\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,\left(d+e\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,\left(-f\right)^{5/2}}$$

Result (type 4, 1322 leaves):

$$\frac{1}{4\,f^{5/2}}\left(-\frac{4\,\sqrt{f}\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)^2}{x}-\right.$$

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

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

$$b\,n\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)\,\left(\frac{8\,\sqrt{f}\,\left(e\,x\,\text{Log}[x]-\left(d+e\,x\right)\,\text{Log}[d+e\,x]\right)}{d\,x}-\right.$$

$$\left(\sqrt{f}\,\sqrt{g}\,\left(-2\,e\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]+2\,\sqrt{g}\,\left(d+e\,x\right)\,\text{Log}[d+e\,x]+\right.\right.$$

$$\left.\left.\left.\mathbb{i}\,e\left(\sqrt{f}+\mathbb{i}\sqrt{g}\,x\right)\text{Log}\left[f+g\,x^2\right]\right)\right)\middle/\left(\left(e\sqrt{f}-\mathbb{i}\,d\sqrt{g}\right)\left(\sqrt{f}+\mathbb{i}\sqrt{g}\,x\right)\right)+$$

$$\left(\sqrt{f}\sqrt{g}\left(2\,e\left(\sqrt{f}-\mathbb{i}\sqrt{g}\,x\right)\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+\right.\right.$$

$$\left.\left.e\left(\mathbb{i}\sqrt{f}+\sqrt{g}\,x\right)\text{Log}\left[f+g\,x^2\right]\right)\right)\middle/\left(\left(e\sqrt{f}+\mathbb{i}\,d\sqrt{g}\right)\left(\sqrt{f}-\mathbb{i}\sqrt{g}\,x\right)\right)-$$

$$6\,\mathbb{i}\sqrt{g}\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-\mathbb{i}\,e\sqrt{f}+d\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-\mathbb{i}\,e\sqrt{f}+d\sqrt{g}}\right]\right)+$$

$$\left.\left.6\,\mathbb{i}\sqrt{g}\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{\mathbb{i}\,e\sqrt{f}+d\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{\mathbb{i}\,e\sqrt{f}+d\sqrt{g}}\right]\right)\right)+$$

$$b^2\,n^2\left(\left(\left(\sqrt{f}\sqrt{g}\left(-\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]^2+2\,e\left(\mathbb{i}\sqrt{f}+\sqrt{g}\,x\right)\text{Log}[d+e\,x]\right.\right.\right.\right.$$

$$\left.\left.\left.\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-\mathbb{i}\,e\sqrt{f}+d\sqrt{g}}\right]+2\,e\left(\mathbb{i}\sqrt{f}+\sqrt{g}\,x\right)\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-\mathbb{i}\,e\sqrt{f}+d\sqrt{g}}\right]\right)\right)\right/$$

$$\left(\left(e\sqrt{f}+\mathbb{i}\,d\sqrt{g}\right)\left(\sqrt{f}-\mathbb{i}\sqrt{g}\,x\right)\right)-\left(\sqrt{f}\sqrt{g}\left(\text{Log}[d+e\,x]\left(\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+\right.\right.\right.$$

$$\left.2\,\mathbb{i}\,e\left(\sqrt{f}+\mathbb{i}\sqrt{g}\,x\right)\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{\mathbb{i}\,e\sqrt{f}+d\sqrt{g}}\right]\right)+2\,\mathbb{i}\,e\left(\sqrt{f}+\mathbb{i}\sqrt{g}\,x\right)$$

$$\left.\left.\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{\mathbb{i}\,e\sqrt{f}+d\sqrt{g}}\right]\right)\right)\middle/\left(\left(e\sqrt{f}-\mathbb{i}\,d\sqrt{g}\right)\left(\sqrt{f}+\mathbb{i}\sqrt{g}\,x\right)\right)+\frac{1}{d\,x}$$

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

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

$$\left.2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-\mathbb{i}\,e\sqrt{f}+d\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{-\mathbb{i}\,e\sqrt{f}+d\sqrt{g}}\right]\right)+$$

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

$$\left.\left.\left.2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{\mathbb{i}\,e\sqrt{f}+d\sqrt{g}}\right]\right)\right)\right)$$

Problem 329: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}\left[c\,(a+b\,x)^n\right]^3}{d+e\,x^2}\,dx$$

Optimal (type 4, 477 leaves, 12 steps):

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

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

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

$$\frac{3\,n^3\,\text{PolyLog}\left[4,-\frac{\sqrt{e}\,(a+b\,x)}{b\,\sqrt{-d}-a\,\sqrt{e}}\right]}{\sqrt{-d}\,\sqrt{e}}+\frac{3\,n^3\,\text{PolyLog}\left[4,\frac{\sqrt{e}\,(a+b\,x)}{b\,\sqrt{-d}+a\,\sqrt{e}}\right]}{\sqrt{-d}\,\sqrt{e}}$$

Result (type 4, 754 leaves):

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

$$6\,n\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}[a+b\,x]\,\text{Log}\left[c\,(a+b\,x)^n\right]^2+$$

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

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

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

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

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

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

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

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

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

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

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

Problem 330: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 347 leaves, 10 steps):

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

Result (type 4, 488 leaves):

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

Problem 331: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 229 leaves, 8 steps):

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

Result (type 4, 232 leaves):

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

Problem 333: Unable to integrate problem.

$$\int\frac{\text{Log}\left[c-\frac{a\,(1-c)\,x^{-m}}{b}\right]}{x\,(a+b\,x^m)}\,dx$$

Optimal (type 4, 27 leaves, 4 steps):

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

Result (type 8, 34 leaves):

$$\int\frac{\text{Log}\left[c-\frac{a\,(1-c)\,x^{-m}}{b}\right]}{x\,(a+b\,x^m)}\,dx$$

Problem 334: Unable to integrate problem.

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

Optimal (type 4, 27 leaves, 5 steps):

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

Result (type 8, 38 leaves):

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

Problem 335: Unable to integrate problem.

$$\int\frac{\text{Log}\left[c\left(a-\frac{(d-a\,c\,d)\,x^{-m}}{c\,e}\right)\right]}{x\,(d+e\,x^m)}\,dx$$

Optimal (type 4, 28 leaves, 4 steps):

$$\frac{\text{PolyLog}\left[2,\frac{(1-a c)\left(e+d x^{-m}\right)}{e}\right]}{d m}$$

Result (type 8, 40 leaves):

$$\int \frac{\text{Log}\left[c\left(a-\frac{(d-a c d) x^{-m}}{c e}\right)\right]}{x\left(d+e x^m\right)} \, dx$$

Problem 336: Unable to integrate problem.

$$\int \frac{\text{Log}\left[\frac{x^{-m}\left(-d+a c d+a c e x^m\right)}{e}\right]}{x\left(d+e x^m\right)} \, dx$$

Optimal (type 4, 28 leaves, 5 steps):

$$\frac{\text{PolyLog}\left[2,\frac{(1-a c)\left(e+d x^{-m}\right)}{e}\right]}{d m}$$

Result (type 8, 40 leaves):

$$\int \frac{\text{Log}\left[\frac{x^{-m}\left(-d+a c d+a c e x^m\right)}{e}\right]}{x\left(d+e x^m\right)} \, dx$$

Problem 337: Result more than twice size of optimal antiderivative.

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

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

$$\frac{\text{PolyLog}\left[2,1-\frac{2 a}{a+b x}\right]}{2 a b}$$

Result (type 4, 89 leaves):

$$\frac{1}{4 a b}\left(4 \text{ArcTanh}\left[\frac{b x}{a}\right]\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{2 a}{a+b x}\right]\right)-\text{Log}\left[\frac{a}{b}+x\right]\left(\text{Log}[4]+\text{Log}\left[\frac{a}{b}+x\right]-2 \text{Log}\left[1-\frac{b x}{a}\right]\right)+2 \text{PolyLog}\left[2,\frac{a+b x}{2 a}\right]\right)$$

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

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

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

$$\frac{\text{PolyLog}\left[2,1-\frac{2a}{a+bx}\right]}{2ab}$$

Result (type 4, 89 leaves):

$$\frac{1}{4ab}\left(4\,\text{ArcTanh}\left[\frac{bx}{a}\right]\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{2a}{a+bx}\right]\right)-\text{Log}\left[\frac{a}{b}+x\right]\left(\text{Log}[4]+\text{Log}\left[\frac{a}{b}+x\right]-2\,\text{Log}\left[1-\frac{bx}{a}\right]\right)+2\,\text{PolyLog}\left[2,\frac{a+bx}{2a}\right]\right)$$

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

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

Optimal (type 4, 37 leaves, 1 step):

$$\frac{\text{PolyLog}\left[2,1-\frac{a(1-c)+b(1+c)x}{a+bx}\right]}{2ab}$$

Result (type 4, 259 leaves):

$$\frac{1}{4ab}\left(4\,\text{ArcTanh}\left[\frac{bx}{a}\right]\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{a}{b}+x\right]^2-4\,\text{ArcTanh}\left[\frac{bx}{a}\right]\text{Log}\left[\frac{a-ac}{b+bc}+x\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{a-bx}{2a}\right]-2\,\text{Log}\left[\frac{a-ac}{b+bc}+x\right]\text{Log}\left[\frac{(1+c)(a-bx)}{2a}\right]+2\,\text{Log}\left[\frac{a-ac}{b+bc}+x\right]\text{Log}\left[\frac{(1+c)(a+bx)}{2ac}\right]+4\,\text{ArcTanh}\left[\frac{bx}{a}\right]\text{Log}\left[\frac{a-ac+b(1+c)x}{a+bx}\right]+2\,\text{PolyLog}\left[2,\frac{a+bx}{2a}\right]-2\,\text{PolyLog}\left[2,\frac{a-ac+b(1+c)x}{2a}\right]+2\,\text{PolyLog}\left[2,-\frac{a-ac+b(1+c)x}{2ac}\right]\right)$$

Problem 340: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[\frac{a(1-c)+b(1+c)x}{a+bx}\right]}{(a-bx)(a+bx)}\,dx$$

Optimal (type 4, 27 leaves, 2 steps):

$$\frac{\text{PolyLog}\left[2,\frac{c(a-bx)}{a+bx}\right]}{2ab}$$

Result (type 4, 259 leaves):

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

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

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

Optimal (type 4, 27 leaves, 1 step):

$$\frac{\text{PolyLog}\left[2,\frac{c\,(a-b\,x)}{a+b\,x}\right]}{2\,a\,b}$$

Result (type 4, 259 leaves):

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

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

$$\int \frac{\text{Log}\left[1-\frac{c\,(a-b\,x)}{a+b\,x}\right]}{(a-b\,x)\,(a+b\,x)}\,dx$$

Optimal (type 4, 27 leaves, 3 steps):

$$\frac{\text{PolyLog}\left[2,\frac{c\,(a-b\,x)}{a+b\,x}\right]}{2\,a\,b}$$

Result (type 4, 259 leaves):

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

Problem 343: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[c\,(a+b\,x)^n\right]^3}{d\,x+e\,x^2}\,dx$$

Optimal (type 4, 238 leaves, 13 steps):

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

Result (type 4, 494 leaves):

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

Problem 369: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 309 leaves, 17 steps):

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

Result (type 4, 655 leaves):

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

Problem 373: Result more than twice size of optimal antiderivative.

$$\int \text{Log}[f x^m] (a + b \text{Log}[c (d+e x)^n])^3 \, dx$$

Optimal (type 4, 522 leaves, 28 steps):

$$-12\,a\,b^2\,m\,n^2\,x+18\,b^3\,m\,n^3\,x-6\,b^2\,m\,n^2\,(a-b\,n)\,x+$$

$$6\,a\,b^2\,n^2\,x\,\text{Log}[f\,x^m]-6\,b^3\,n^3\,x\,\text{Log}[f\,x^m]-\frac{18\,b^3\,m\,n^2\,(d+e\,x)\,\text{Log}[c\,(d+e\,x)^n]}{e}-$$

$$\frac{6\,b^3\,d\,m\,n^2\,\text{Log}\left[-\frac{e\,x}{d}\right]\,\text{Log}[c\,(d+e\,x)^n]}{e}+\frac{6\,b^3\,n^2\,(d+e\,x)\,\text{Log}[f\,x^m]\,\text{Log}[c\,(d+e\,x)^n]}{e}+$$

$$\frac{6\,b\,m\,n\,(d+e\,x)\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2}{e}+\frac{3\,b\,d\,m\,n\,\text{Log}\left[-\frac{e\,x}{d}\right]\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2}{e}-$$

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

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

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

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

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

Result (type 4, 1163 leaves) :

$$
\begin{aligned}
&\frac{1}{e}\Big(-b^3 n^3 (d+e x) \left(m \text{Log}[x]-\text{Log}\left[f x^m\right]\right) \left(-6+6 \text{Log}[d+e x]-3 \text{Log}[d+e x]^2+\text{Log}[d+e x]^3\right)-\\
&\quad 3 b^2 n^2 \left(m \text{Log}[x]-\text{Log}\left[f x^m\right]\right) \left(2 e x-2 (d+e x) \text{Log}[d+e x]+(d+e x) \text{Log}[d+e x]^2\right)\\
&\quad\ \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)-\\
&\quad 3 b e n x \left(m-\text{Log}\left[f x^m\right]\right) \text{Log}[d+e x] \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2-\\
&\quad 3 b d n \left(m+m \text{Log}[x]-\text{Log}\left[f x^m\right]\right) \text{Log}[d+e x] \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2+\\
&\quad e x \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \Big(3 b m n+3 b n \left(m \text{Log}[x]-\text{Log}\left[f x^m\right]\right)+\\
&\qquad a \left(-m \text{Log}[x]+\text{Log}\left[f x^m\right]\right)+b \left(-m \text{Log}[x]+\text{Log}\left[f x^m\right]\right) \left(-n \text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\Big)+\\
&\quad a d m \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \left(\text{Log}[x] \text{Log}\left[1+\frac{e x}{d}\right]+\text{PolyLog}\left[2,-\frac{e x}{d}\right]\right)-\\
&\quad b d m \left(n \text{Log}[d+e x]-\text{Log}\left[c (d+e x)^n\right]\right) \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2\\
&\quad\ \left(\text{Log}[x] \text{Log}\left[1+\frac{e x}{d}\right]+\text{PolyLog}\left[2,-\frac{e x}{d}\right]\right)-a m \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2\\
&\quad\ \left(e x+\text{Log}[x] \left(-e x+d \text{Log}\left[1+\frac{e x}{d}\right]\right)+d\, \text{PolyLog}\left[2,-\frac{e x}{d}\right]\right)+\\
&\quad 3 b m n \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2\\
&\quad\ \left(e x+\text{Log}[x] \left(-e x+d \text{Log}\left[1+\frac{e x}{d}\right]\right)+d\, \text{PolyLog}\left[2,-\frac{e x}{d}\right]\right)+\\
&\quad b m \left(n \text{Log}[d+e x]-\text{Log}\left[c (d+e x)^n\right]\right) \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2\\
&\quad\ \left(e x+\text{Log}[x] \left(-e x+d \text{Log}\left[1+\frac{e x}{d}\right]\right)+d\, \text{PolyLog}\left[2,-\frac{e x}{d}\right]\right)-\\
&\quad 3 b^2 m n^2 \left(-a+b n \text{Log}[d+e x]-b \text{Log}\left[c (d+e x)^n\right]\right)\\
&\quad\ \Big(-6 e x+2 e x \text{Log}[x]+4 d \text{Log}[d+e x]+4 e x \text{Log}[d+e x]-2 e x \text{Log}[x] \text{Log}[d+e x]-\\
&\qquad d \text{Log}[d+e x]^2-e x \text{Log}[d+e x]^2+d \text{Log}[x] \text{Log}[d+e x]^2+e x \text{Log}[x] \text{Log}[d+e x]^2-\\
&\qquad d \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]^2-2 d \text{Log}[x] \text{Log}\left[1+\frac{e x}{d}\right]-2 d\, \text{PolyLog}\left[2,-\frac{e x}{d}\right]-\\
&\qquad 2 d \text{Log}[d+e x] \text{PolyLog}\left[2,1+\frac{e x}{d}\right]+2 d\, \text{PolyLog}\left[3,1+\frac{e x}{d}\right]\Big)+b^3 m n^3\\
&\quad\ \Big(6 d+24 e x-6 e x \text{Log}[x]-18 d \text{Log}[d+e x]-18 e x \text{Log}[d+e x]+6 e x \text{Log}[x] \text{Log}[d+e x]+\\
&\qquad 6 d \text{Log}[d+e x]^2+6 e x \text{Log}[d+e x]^2-3 d \text{Log}[x] \text{Log}[d+e x]^2-3 e x \text{Log}[x] \text{Log}[d+e x]^2+\\
&\qquad 3 d \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]^2-d \text{Log}[d+e x]^3-e x \text{Log}[d+e x]^3+d \text{Log}[x] \text{Log}[d+e x]^3+\\
&\qquad e x \text{Log}[x] \text{Log}[d+e x]^3-d \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]^3+6 d \text{Log}[x] \text{Log}\left[1+\frac{e x}{d}\right]+\\
&\qquad 6 d\, \text{PolyLog}\left[2,-\frac{e x}{d}\right]-3 d \left(-2+\text{Log}[d+e x]\right) \text{Log}[d+e x] \text{PolyLog}\left[2,1+\frac{e x}{d}\right]-\\
&\qquad 6 d\, \text{PolyLog}\left[3,1+\frac{e x}{d}\right]+6 d \text{Log}[d+e x] \text{PolyLog}\left[3,1+\frac{e x}{d}\right]-6 d\, \text{PolyLog}\left[4,1+\frac{e x}{d}\right]\Big)\Big)
\end{aligned}
$$

Problem 394: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 649 leaves, 41 steps):

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

Result (type 4, 1405 leaves) :

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

Problem 397: Result more than twice size of optimal antiderivative.

$$\int x\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3\,\left(f+g\,\text{Log}\left[h\,(i+j\,x)^m\right]\right)\,dx$$

Optimal (type 4, 2050 leaves, 148 steps):

$$-\frac{6\,a\,b^2\,d\,f\,n^2\,x}{e}+\frac{12\,a\,b^2\,d\,g\,m\,n^2\,x}{e}+\frac{21\,a\,b^2\,g\,i\,m\,n^2\,x}{4\,j}+\frac{6\,b^3\,d\,f\,n^3\,x}{e}-\frac{141\,b^3\,d\,g\,m\,n^3\,x}{8\,e}-\frac{45\,b^3\,g\,i\,m\,n^3\,x}{8\,j}+\frac{3}{8}\,b^3\,g\,m\,n^3\,x^2-\frac{3\,b^3\,f\,n^3\,(d+e\,x)^2}{8\,e^2}+$$

$$\frac{3 b^3 g m n^3 (d+e x)^2}{8 e^2}+\frac{3 b^3 d^2 g m n^3 \text{Log}[d+e x]}{8 e^2}-\frac{6 b^3 d f n^2 (d+e x) \text{Log}\left[c (d+e x)^n\right]}{e^2}+$$

$$\frac{12 b^3 d g m n^2 (d+e x) \text{Log}\left[c (d+e x)^n\right]}{e^2}+\frac{21 b^3 g i m n^2 (d+e x) \text{Log}\left[c (d+e x)^n\right]}{4 e j}-$$

$$\frac{3}{8} b^2 g m n^2 x^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)+\frac{3 b^2 f n^2 (d+e x)^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{4 e^2}-$$

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

$$\frac{15 b d g m n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{4 e^2}-\frac{9 b g i m n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{4 e j}-$$

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

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

$$\frac{g i m (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3}{2 e j}-\frac{g m (d+e x)^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3}{4 e^2}+$$

$$\frac{3 b^3 g i^2 m n^3 \text{Log}[i+j x]}{8 j^2}-\frac{3 b^2 g i^2 m n^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]}{4 j^2}-$$

$$\frac{9 b^2 d g i m n^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]}{2 e j}-$$

$$\frac{9 b d^2 g m n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]}{4 e^2}+$$

$$\frac{3 b g i^2 m n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]}{4 j^2}+$$

$$\frac{3 b d g i m n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]}{2 e j}+\frac{d^2 g m \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]}{2 e^2}-$$

$$\frac{g i^2 m \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]}{2 j^2}-\frac{3}{8} b^3 g n^3 x^2 \text{Log}\left[h (i+j x)^m\right]+$$

$$\frac{21 b^3 d g n^3 (i+j x) \text{Log}\left[h (i+j x)^m\right]}{4 e j}-\frac{21 b^3 d^2 g n^3 \text{Log}\left[-\frac{j (d+e x)}{e i-d j}\right] \text{Log}\left[h (i+j x)^m\right]}{4 e^2}-$$

$$\frac{9 b^2 d g n^2 x \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[h (i+j x)^m\right]}{2 e}+$$

$$\frac{3}{4} b^2 g n^2 x^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[h (i+j x)^m\right]+$$

$$\frac{9 b d^2 g n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[h (i+j x)^m\right]}{4 e^2}+$$

$$\frac{3 b d g n x \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[h (i+j x)^m\right]}{2 e}-$$

$$\frac{3}{4} b g n x^2 \left(a+b \text{Log}\left[c \left(d+e x\right)^n\right]\right)^2 \text{Log}\left[h \left(i+j x\right)^m\right] - \frac{d^2 g \left(a+b \text{Log}\left[c \left(d+e x\right)^n\right]\right)^3 \text{Log}\left[h \left(i+j x\right)^m\right]}{2 e^2} +$$
$$\frac{1}{2} x^2 \left(a+b \text{Log}\left[c \left(d+e x\right)^n\right]\right)^3 \left(f+g \text{Log}\left[h \left(i+j x\right)^m\right]\right) - \frac{3 b^3 g i^2 m n^3 \text{PolyLog}\left[2, -\frac{j (d+e x)}{e i-d j}\right]}{4 j^2} -$$
$$\frac{9 b^3 d g i m n^3 \text{PolyLog}\left[2, -\frac{j (d+e x)}{e i-d j}\right]}{2 e j} - \frac{9 b^2 d^2 g m n^2 \left(a+b \text{Log}\left[c \left(d+e x\right)^n\right]\right) \text{PolyLog}\left[2, -\frac{j (d+e x)}{e i-d j}\right]}{2 e^2} +$$
$$\frac{3 b^2 g i^2 m n^2 \left(a+b \text{Log}\left[c \left(d+e x\right)^n\right]\right) \text{PolyLog}\left[2, -\frac{j (d+e x)}{e i-d j}\right]}{2 j^2} +$$
$$\frac{3 b^2 d g i m n^2 \left(a+b \text{Log}\left[c \left(d+e x\right)^n\right]\right) \text{PolyLog}\left[2, -\frac{j (d+e x)}{e i-d j}\right]}{e j} +$$
$$\frac{3 b d^2 g m n \left(a+b \text{Log}\left[c \left(d+e x\right)^n\right]\right)^2 \text{PolyLog}\left[2, -\frac{j (d+e x)}{e i-d j}\right]}{2 e^2} -$$
$$\frac{3 b g i^2 m n \left(a+b \text{Log}\left[c \left(d+e x\right)^n\right]\right)^2 \text{PolyLog}\left[2, -\frac{j (d+e x)}{e i-d j}\right]}{2 j^2} - \frac{21 b^3 d^2 g m n^3 \text{PolyLog}\left[2, \frac{e (i+j x)}{e i-d j}\right]}{4 e^2} +$$
$$\frac{9 b^3 d^2 g m n^3 \text{PolyLog}\left[3, -\frac{j (d+e x)}{e i-d j}\right]}{2 e^2} - \frac{3 b^3 g i^2 m n^3 \text{PolyLog}\left[3, -\frac{j (d+e x)}{e i-d j}\right]}{2 j^2} -$$
$$\frac{3 b^3 d g i m n^3 \text{PolyLog}\left[3, -\frac{j (d+e x)}{e i-d j}\right]}{e j} - \frac{3 b^2 d^2 g m n^2 \left(a+b \text{Log}\left[c \left(d+e x\right)^n\right]\right) \text{PolyLog}\left[3, -\frac{j (d+e x)}{e i-d j}\right]}{e^2} +$$
$$\frac{3 b^2 g i^2 m n^2 \left(a+b \text{Log}\left[c \left(d+e x\right)^n\right]\right) \text{PolyLog}\left[3, -\frac{j (d+e x)}{e i-d j}\right]}{j^2} +$$
$$\frac{3 b^3 d^2 g m n^3 \text{PolyLog}\left[4, -\frac{j (d+e x)}{e i-d j}\right]}{e^2} - \frac{3 b^3 g i^2 m n^3 \text{PolyLog}\left[4, -\frac{j (d+e x)}{e i-d j}\right]}{j^2}$$

Result (type 4, 4971 leaves):

$$\frac{1}{8 e^2 j^2}$$
$$\Big(-12 a^2 b d e g i j m n + 36 a b^2 d e g i j m n^2 + 24 a b^2 d^2 g j^2 m n^2 - 42 b^3 d e g i j m n^3 - 60 b^3 d^2 g j^2 m n^3 +$$
$$4 a^3 e^2 g i j m x + 12 a^2 b d e f j^2 n x - 18 a^2 b e^2 g i j m n x - 18 a^2 b d e g j^2 m n x - 36 a b^2 d e f j^2 n^2 x +$$
$$42 a b^2 e^2 g i j m n^2 x + 84 a b^2 d e g j^2 m n^2 x + 42 b^3 d e f j^2 n^3 x - 45 b^3 e^2 g i j m n^3 x -$$
$$135 b^3 d e g j^2 m n^3 x + 4 a^3 e^2 f j^2 x^2 - 2 a^3 e^2 g j^2 m x^2 - 6 a^2 b e^2 f j^2 n x^2 + 6 a^2 b e^2 g j^2 m n x^2 +$$
$$6 a b^2 e^2 f j^2 n^2 x^2 - 9 a b^2 e^2 g j^2 m n^2 x^2 - 3 b^3 e^2 f j^2 n^3 x^2 + 6 b^3 e^2 g j^2 m n^3 x^2 -$$
$$12 a^2 b d^2 f j^2 n \text{Log}[d+e x] + 12 a^2 b d e g i j m n \text{Log}[d+e x] + 6 a^2 b d^2 g j^2 m n \text{Log}[d+e x] +$$
$$36 a b^2 d^2 f j^2 n^2 \text{Log}[d+e x] - 12 a b^2 d e g i j m n^2 \text{Log}[d+e x] - 48 a b^2 d^2 g j^2 m n^2 \text{Log}[d+e x] -$$
$$42 b^3 d^2 f j^2 n^3 \text{Log}[d+e x] + 6 b^3 d e g i j m n^3 \text{Log}[d+e x] + 69 b^3 d^2 g j^2 m n^3 \text{Log}[d+e x] +$$
$$12 a b^2 d^2 f j^2 n^2 \text{Log}[d+e x]^2 - 12 a b^2 d e g i j m n^2 \text{Log}[d+e x]^2 - 6 a b^2 d^2 g j^2 m n^2 \text{Log}[d+e x]^2 -$$
$$18 b^3 d^2 f j^2 n^3 \text{Log}[d+e x]^2 + 6 b^3 d e g i j m n^3 \text{Log}[d+e x]^2 + 24 b^3 d^2 g j^2 m n^3 \text{Log}[d+e x]^2 -$$
$$4 b^3 d^2 f j^2 n^3 \text{Log}[d+e x]^3 + 4 b^3 d e g i j m n^3 \text{Log}[d+e x]^3 + 2 b^3 d^2 g j^2 m n^3 \text{Log}[d+e x]^3 -$$

$24\,a\,b^2\,d\,e\,g\,i\,j\,m\,n\,\text{Log}\left[c\,(d+e\,x)^n\right]+36\,b^3\,d\,e\,g\,i\,j\,m\,n^2\,\text{Log}\left[c\,(d+e\,x)^n\right]+$
$24\,b^3\,d^2\,g\,j^2\,m\,n^2\,\text{Log}\left[c\,(d+e\,x)^n\right]+12\,a^2\,b\,e^2\,g\,i\,j\,m\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]+$
$24\,a\,b^2\,d\,e\,f\,j^2\,n\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]-36\,a\,b^2\,e^2\,g\,i\,j\,m\,n\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]-$
$36\,a\,b^2\,d\,e\,g\,j^2\,m\,n\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]-36\,b^3\,d\,e\,f\,j^2\,n^2\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]+$
$42\,b^3\,e^2\,g\,i\,j\,m\,n^2\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]+84\,b^3\,d\,e\,g\,j^2\,m\,n^2\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]+$
$12\,a^2\,b\,e^2\,f\,j^2\,x^2\,\text{Log}\left[c\,(d+e\,x)^n\right]-6\,a^2\,b\,e^2\,g\,j^2\,m\,x^2\,\text{Log}\left[c\,(d+e\,x)^n\right]-$
$12\,a\,b^2\,e^2\,f\,j^2\,n\,x^2\,\text{Log}\left[c\,(d+e\,x)^n\right]+12\,a\,b^2\,e^2\,g\,j^2\,m\,n\,x^2\,\text{Log}\left[c\,(d+e\,x)^n\right]+$
$6\,b^3\,e^2\,f\,j^2\,n^2\,x^2\,\text{Log}\left[c\,(d+e\,x)^n\right]-9\,b^3\,e^2\,g\,j^2\,m\,n^2\,x^2\,\text{Log}\left[c\,(d+e\,x)^n\right]-$
$24\,a\,b^2\,d^2\,f\,j^2\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]+24\,a\,b^2\,d\,e\,g\,i\,j\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]+$
$12\,a\,b^2\,d^2\,g\,j^2\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]+36\,b^3\,d^2\,f\,j^2\,n^2\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]-$
$12\,b^3\,d\,e\,g\,i\,j\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]-48\,b^3\,d^2\,g\,j^2\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]+$
$12\,b^3\,d^2\,f\,j^2\,n^2\,\text{Log}[d+e\,x]^2\,\text{Log}\left[c\,(d+e\,x)^n\right]-12\,b^3\,d\,e\,g\,i\,j\,m\,n^2\,\text{Log}[d+e\,x]^2\,\text{Log}\left[c\,(d+e\,x)^n\right]-$
$6\,b^3\,d^2\,g\,j^2\,m\,n^2\,\text{Log}[d+e\,x]^2\,\text{Log}\left[c\,(d+e\,x)^n\right]-12\,b^3\,d\,e\,g\,i\,j\,m\,n\,\text{Log}\left[c\,(d+e\,x)^n\right]^2+$
$12\,a\,b^2\,e^2\,g\,i\,j\,m\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]^2+12\,b^3\,d\,e\,f\,j^2\,n\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]^2-$
$18\,b^3\,e^2\,g\,i\,j\,m\,n\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]^2-18\,b^3\,d\,e\,g\,j^2\,m\,n\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]^2+$
$12\,a\,b^2\,e^2\,f\,j^2\,x^2\,\text{Log}\left[c\,(d+e\,x)^n\right]^2-6\,a\,b^2\,e^2\,g\,j^2\,m\,x^2\,\text{Log}\left[c\,(d+e\,x)^n\right]^2-$
$6\,b^3\,e^2\,f\,j^2\,n\,x^2\,\text{Log}\left[c\,(d+e\,x)^n\right]^2+6\,b^3\,e^2\,g\,j^2\,m\,n\,x^2\,\text{Log}\left[c\,(d+e\,x)^n\right]^2-$
$12\,b^3\,d^2\,f\,j^2\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]^2+12\,b^3\,d\,e\,g\,i\,j\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]^2+$
$6\,b^3\,d^2\,g\,j^2\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]^2+4\,b^3\,e^2\,g\,i\,j\,m\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]^3+$
$4\,b^3\,e^2\,f\,j^2\,x^2\,\text{Log}\left[c\,(d+e\,x)^n\right]^3-2\,b^3\,e^2\,g\,j^2\,m\,x^2\,\text{Log}\left[c\,(d+e\,x)^n\right]^3-4\,a^3\,e^2\,g\,i^2\,m\,\text{Log}[i+j\,x]+$
$6\,a^2\,b\,e^2\,g\,i^2\,m\,n\,\text{Log}[i+j\,x]+12\,a^2\,b\,d\,e\,g\,i\,j\,m\,n\,\text{Log}[i+j\,x]-6\,a\,b^2\,e^2\,g\,i^2\,m\,n^2\,\text{Log}[i+j\,x]-$
$36\,a\,b^2\,d\,e\,g\,i\,j\,m\,n^2\,\text{Log}[i+j\,x]+3\,b^3\,e^2\,g\,i^2\,m\,n^3\,\text{Log}[i+j\,x]+42\,b^3\,d\,e\,g\,i\,j\,m\,n^3\,\text{Log}[i+j\,x]+$
$12\,a^2\,b\,e^2\,g\,i^2\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}[i+j\,x]-12\,a\,b^2\,e^2\,g\,i^2\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}[i+j\,x]-$
$24\,a\,b^2\,d\,e\,g\,i\,j\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}[i+j\,x]+6\,b^3\,e^2\,g\,i^2\,m\,n^3\,\text{Log}[d+e\,x]\,\text{Log}[i+j\,x]+$
$36\,b^3\,d\,e\,g\,i\,j\,m\,n^3\,\text{Log}[d+e\,x]\,\text{Log}[i+j\,x]-12\,a\,b^2\,e^2\,g\,i^2\,m\,n^2\,\text{Log}[d+e\,x]^2\,\text{Log}[i+j\,x]+$
$6\,b^3\,e^2\,g\,i^2\,m\,n^3\,\text{Log}[d+e\,x]^2\,\text{Log}[i+j\,x]+12\,b^3\,d\,e\,g\,i\,j\,m\,n^3\,\text{Log}[d+e\,x]^2\,\text{Log}[i+j\,x]+$
$4\,b^3\,e^2\,g\,i^2\,m\,n^3\,\text{Log}[d+e\,x]^3\,\text{Log}[i+j\,x]-12\,a^2\,b\,e^2\,g\,i^2\,m\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}[i+j\,x]+$
$12\,a\,b^2\,e^2\,g\,i^2\,m\,n\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}[i+j\,x]+24\,a\,b^2\,d\,e\,g\,i\,j\,m\,n\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}[i+j\,x]-$
$6\,b^3\,e^2\,g\,i^2\,m\,n^2\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}[i+j\,x]-36\,b^3\,d\,e\,g\,i\,j\,m\,n^2\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}[i+j\,x]+$
$24\,a\,b^2\,e^2\,g\,i^2\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}[i+j\,x]-$
$12\,b^3\,e^2\,g\,i^2\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}[i+j\,x]-$
$24\,b^3\,d\,e\,g\,i\,j\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}[i+j\,x]-$
$12\,b^3\,e^2\,g\,i^2\,m\,n^2\,\text{Log}[d+e\,x]^2\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}[i+j\,x]-$
$12\,a\,b^2\,e^2\,g\,i^2\,m\,\text{Log}\left[c\,(d+e\,x)^n\right]^2\,\text{Log}[i+j\,x]+6\,b^3\,e^2\,g\,i^2\,m\,n\,\text{Log}\left[c\,(d+e\,x)^n\right]^2\,\text{Log}[i+j\,x]+$
$12\,b^3\,d\,e\,g\,i\,j\,m\,n\,\text{Log}\left[c\,(d+e\,x)^n\right]^2\,\text{Log}[i+j\,x]+$
$12\,b^3\,e^2\,g\,i^2\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]^2\,\text{Log}[i+j\,x]-$
$4\,b^3\,e^2\,g\,i^2\,m\,\text{Log}\left[c\,(d+e\,x)^n\right]^3\,\text{Log}[i+j\,x]-12\,a^2\,b\,e^2\,g\,i^2\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]+$
$12\,a^2\,b\,d^2\,g\,j^2\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]+12\,a\,b^2\,e^2\,g\,i^2\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]+$
$24\,a\,b^2\,d\,e\,g\,i\,j\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]-$
$36\,a\,b^2\,d^2\,g\,j^2\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]-6\,b^3\,e^2\,g\,i^2\,m\,n^3\,\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]-$

$$36 b^3 d e g i j m n^3 \text{Log}[d+e x] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+42 b^3 d^2 g j^2 m n^3 \text{Log}[d+e x] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+$$
$$12 a b^2 e^2 g i^2 m n^2 \text{Log}[d+e x]^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-$$
$$12 a b^2 d^2 g j^2 m n^2 \text{Log}[d+e x]^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-6 b^3 e^2 g i^2 m n^3 \text{Log}[d+e x]^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-$$
$$12 b^3 d e g i j m n^3 \text{Log}[d+e x]^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+18 b^3 d^2 g j^2 m n^3 \text{Log}[d+e x]^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-$$
$$4 b^3 e^2 g i^2 m n^3 \text{Log}[d+e x]^3 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+4 b^3 d^2 g j^2 m n^3 \text{Log}[d+e x]^3 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-$$
$$24 a b^2 e^2 g i^2 m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+$$
$$24 a b^2 d^2 g j^2 m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+$$
$$12 b^3 e^2 g i^2 m n^2 \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+$$
$$24 b^3 d e g i j m n^2 \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-$$
$$36 b^3 d^2 g j^2 m n^2 \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+$$
$$12 b^3 e^2 g i^2 m n^2 \text{Log}[d+e x]^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-$$
$$12 b^3 d^2 g j^2 m n^2 \text{Log}[d+e x]^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-$$
$$12 b^3 e^2 g i^2 m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+$$
$$12 b^3 d^2 g j^2 m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+$$
$$12 a^2 b d e g j^2 n x \text{Log}\left[h (i+j x)^m\right]-36 a b^2 d e g j^2 n^2 x \text{Log}\left[h (i+j x)^m\right]+$$
$$42 b^3 d e g j^2 n^3 x \text{Log}\left[h (i+j x)^m\right]+4 a^3 e^2 g j^2 x^2 \text{Log}\left[h (i+j x)^m\right]-$$
$$6 a^2 b e^2 g j^2 n x^2 \text{Log}\left[h (i+j x)^m\right]+6 a b^2 e^2 g j^2 n^2 x^2 \text{Log}\left[h (i+j x)^m\right]-$$
$$3 b^3 e^2 g j^2 n^3 x^2 \text{Log}\left[h (i+j x)^m\right]-12 a^2 b d^2 g j^2 n \text{Log}[d+e x] \text{Log}\left[h (i+j x)^m\right]+$$
$$36 a b^2 d^2 g j^2 n^2 \text{Log}[d+e x] \text{Log}\left[h (i+j x)^m\right]-42 b^3 d^2 g j^2 n^3 \text{Log}[d+e x] \text{Log}\left[h (i+j x)^m\right]+$$
$$12 a b^2 d^2 g j^2 n^2 \text{Log}[d+e x]^2 \text{Log}\left[h (i+j x)^m\right]-18 b^3 d^2 g j^2 n^3 \text{Log}[d+e x]^2 \text{Log}\left[h (i+j x)^m\right]-$$
$$4 b^3 d^2 g j^2 n^3 \text{Log}[d+e x]^3 \text{Log}\left[h (i+j x)^m\right]+24 a b^2 d e g j^2 n x \text{Log}\left[c (d+e x)^n\right]$$
$$\text{Log}\left[h (i+j x)^m\right]-36 b^3 d e g j^2 n^2 x \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[h (i+j x)^m\right]+$$
$$12 a^2 b e^2 g j^2 x^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[h (i+j x)^m\right]-12 a b^2 e^2 g j^2 n x^2 \text{Log}\left[c (d+e x)^n\right]$$
$$\text{Log}\left[h (i+j x)^m\right]+6 b^3 e^2 g j^2 n^2 x^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[h (i+j x)^m\right]-$$
$$24 a b^2 d^2 g j^2 n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[h (i+j x)^m\right]+$$
$$36 b^3 d^2 g j^2 n^2 \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[h (i+j x)^m\right]+$$
$$12 b^3 d^2 g j^2 n^2 \text{Log}[d+e x]^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[h (i+j x)^m\right]+$$
$$12 b^3 d e g j^2 n x \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}\left[h (i+j x)^m\right]+$$
$$12 a b^2 e^2 g j^2 x^2 \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}\left[h (i+j x)^m\right]-$$

$$6 b^3 e^2 g j^2 n x^2 \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}\left[h (i+j x)^m\right] - 12 b^3 d^2 g j^2 n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}\left[h (i+j x)^m\right] + 4 b^3 e^2 g j^2 x^2 \text{Log}\left[c (d+e x)^n\right]^3 \text{Log}\left[h (i+j x)^m\right] - 6 b g (e i-d j) m n \left(2 a^2 (e i+d j) - 2 a b (e i+3 d j) n + b^2 (e i+7 d j) n^2 - 2 b (-2 a (e i+d j) + b (e i+3 d j) n) \text{Log}\left[c (d+e x)^n\right] + 2 b^2 (e i+d j) \text{Log}\left[c (d+e x)^n\right]^2\right) \text{PolyLog}\left[2, \frac{j (d+e x)}{-e i+d j}\right] + 12 b^2 g (e i-d j) m n^2 \left(2 a (e i+d j) - b (e i+3 d j) n + 2 b (e i+d j) \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[3, \frac{j (d+e x)}{-e i+d j}\right] - 24 b^3 e^2 g i^2 m n^3 \text{PolyLog}\left[4, \frac{j (d+e x)}{-e i+d j}\right] + 24 b^3 d^2 g j^2 m n^3 \text{PolyLog}\left[4, \frac{j (d+e x)}{-e i+d j}\right]\Bigg)$$

Problem 398: Result more than twice size of optimal antiderivative.

$$\int \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3 \left(f+g \text{Log}\left[h (i+j x)^m\right]\right) dx$$

Optimal (type 4, 1147 leaves, 64 steps):

$$6 a b^2 f n^2 x - 18 a b^2 g m n^2 x - 6 b^3 f n^3 x + 24 b^3 g m n^3 x + \frac{6 b^3 f n^2 (d+e x) \text{Log}\left[c (d+e x)^n\right]}{e} - \frac{18 b^3 g m n^2 (d+e x) \text{Log}\left[c (d+e x)^n\right]}{e} - \frac{3 b f n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{e} + \frac{6 b g m n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{e} + \frac{d f \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3}{e} - \frac{g m (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3}{e} + \frac{6 b^2 g i m n^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]}{j} + \frac{3 b d g m n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]}{e} - \frac{3 b g i m n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]}{j} - \frac{d g m \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]}{e} + \frac{g i m \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]}{j} - \frac{6 b^3 g n^3 (i+j x) \text{Log}\left[h (i+j x)^m\right]}{j} + \frac{6 b^3 d g n^3 \text{Log}\left[-\frac{j (d+e x)}{e i-d j}\right] \text{Log}\left[h (i+j x)^m\right]}{e} + 6 b^2 g n^2 x \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[h (i+j x)^m\right] - \frac{3 b d g n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[h (i+j x)^m\right]}{e} - 3 b g n x \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[h (i+j x)^m\right] + \frac{d g \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3 \text{Log}\left[h (i+j x)^m\right]}{e} + x \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3 \left(f+g \text{Log}\left[h (i+j x)^m\right]\right) + \frac{6 b^3 g i m n^3 \text{PolyLog}\left[2, -\frac{j (d+e x)}{e i-d j}\right]}{j} +$$

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

Result (type 4, 3326 leaves):

$$\frac{1}{e\,j}\left(-3\,a^2\,b\,d\,f\,j\,n+3\,a^2\,b\,d\,g\,j\,m\,n+6\,a\,b^2\,d\,f\,j\,n^2-12\,a\,b^2\,d\,g\,j\,m\,n^2-6\,b^3\,d\,f\,j\,n^3+\right.$$
$$18\,b^3\,d\,g\,j\,m\,n^3+a^3\,e\,f\,j\,x-a^3\,e\,g\,j\,m\,x-3\,a^2\,b\,e\,f\,j\,n\,x+6\,a^2\,b\,e\,g\,j\,m\,n\,x+6\,a\,b^2\,e\,f\,j\,n^2\,x-$$
$$18\,a\,b^2\,e\,g\,j\,m\,n^2\,x-6\,b^3\,e\,f\,j\,n^3\,x+24\,b^3\,e\,g\,j\,m\,n^3\,x+3\,a^2\,b\,d\,f\,j\,n\,\text{Log}[d+e\,x]-$$
$$3\,a^2\,b\,d\,g\,j\,m\,n\,\text{Log}[d+e\,x]+6\,a\,b^2\,d\,g\,j\,m\,n^2\,\text{Log}[d+e\,x]-6\,b^3\,d\,g\,j\,m\,n^3\,\text{Log}[d+e\,x]-$$
$$3\,a\,b^2\,d\,f\,j\,n^2\,\text{Log}[d+e\,x]^2+3\,a\,b^2\,d\,g\,j\,m\,n^2\,\text{Log}[d+e\,x]^2-3\,b^3\,d\,g\,j\,m\,n^3\,\text{Log}[d+e\,x]^2+$$
$$b^3\,d\,f\,j\,n^3\,\text{Log}[d+e\,x]^3-b^3\,d\,g\,j\,m\,n^3\,\text{Log}[d+e\,x]^3-6\,a\,b^2\,d\,f\,j\,n\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]+$$
$$6\,a\,b^2\,d\,g\,j\,m\,n\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]+6\,b^3\,d\,f\,j\,n^2\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]-12\,b^3\,d\,g\,j\,m\,n^2\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]+$$
$$3\,a^2\,b\,e\,f\,j\,x\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]-3\,a^2\,b\,e\,g\,j\,m\,x\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]-$$
$$6\,a\,b^2\,e\,f\,j\,n\,x\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]+12\,a\,b^2\,e\,g\,j\,m\,n\,x\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]+$$
$$6\,b^3\,e\,f\,j\,n^2\,x\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]-18\,b^3\,e\,g\,j\,m\,n^2\,x\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]+$$
$$6\,a\,b^2\,d\,f\,j\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]-6\,a\,b^2\,d\,g\,j\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]+$$
$$6\,b^3\,d\,g\,j\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]-3\,b^3\,d\,f\,j\,n^2\,\text{Log}[d+e\,x]^2\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]+$$
$$3\,b^3\,d\,g\,j\,m\,n^2\,\text{Log}[d+e\,x]^2\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]-3\,b^3\,d\,f\,j\,n\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]^2+$$
$$3\,b^3\,d\,g\,j\,m\,n\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]^2+3\,a\,b^2\,e\,f\,j\,x\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]^2-3\,a\,b^2\,e\,g\,j\,m\,x\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]^2-$$
$$3\,b^3\,e\,f\,j\,n\,x\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]^2+6\,b^3\,e\,g\,j\,m\,n\,x\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]^2+$$
$$3\,b^3\,d\,f\,j\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]^2-3\,b^3\,d\,g\,j\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]^2+$$
$$b^3\,e\,f\,j\,x\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]^3-b^3\,e\,g\,j\,m\,x\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]^3+a^3\,e\,g\,i\,m\,\text{Log}[i+j\,x]-$$
$$3\,a^2\,b\,e\,g\,i\,m\,n\,\text{Log}[i+j\,x]+3\,a^2\,b\,d\,g\,j\,m\,n\,\text{Log}[i+j\,x]+6\,a\,b^2\,e\,g\,i\,m\,n^2\,\text{Log}[i+j\,x]-$$
$$6\,a\,b^2\,d\,g\,j\,m\,n^2\,\text{Log}[i+j\,x]-6\,b^3\,e\,g\,i\,m\,n^3\,\text{Log}[i+j\,x]+6\,b^3\,d\,g\,j\,m\,n^3\,\text{Log}[i+j\,x]-$$
$$3\,a^2\,b\,e\,g\,i\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}[i+j\,x]+6\,a\,b^2\,e\,g\,i\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}[i+j\,x]-$$
$$6\,a\,b^2\,d\,g\,j\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}[i+j\,x]-6\,b^3\,e\,g\,i\,m\,n^3\,\text{Log}[d+e\,x]\,\text{Log}[i+j\,x]+$$
$$6\,b^3\,d\,g\,j\,m\,n^3\,\text{Log}[d+e\,x]\,\text{Log}[i+j\,x]+3\,a\,b^2\,e\,g\,i\,m\,n^2\,\text{Log}[d+e\,x]^2\,\text{Log}[i+j\,x]-$$
$$3\,b^3\,e\,g\,i\,m\,n^3\,\text{Log}[d+e\,x]^2\,\text{Log}[i+j\,x]+3\,b^3\,d\,g\,j\,m\,n^3\,\text{Log}[d+e\,x]^2\,\text{Log}[i+j\,x]-$$

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

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

Problem 404: Result more than twice size of optimal antiderivative.

$$\int (a + b \text{Log}[c (d (e+f x)^m)^n])^4 \, dx$$

Optimal (type 3, 160 leaves, 7 steps):

$$-24 a b^3 m^3 n^3 x + 24 b^4 m^4 n^4 x - \frac{24 b^4 m^3 n^3 (e+f x) \text{Log}[c (d (e+f x)^m)^n]}{f} + \frac{12 b^2 m^2 n^2 (e+f x) (a + b \text{Log}[c (d (e+f x)^m)^n])^2}{f} - \frac{4 b m n (e+f x) (a + b \text{Log}[c (d (e+f x)^m)^n])^3}{f} + \frac{(e+f x) (a + b \text{Log}[c (d (e+f x)^m)^n])^4}{f}$$

Result (type 3, 480 leaves):

$$\frac{1}{f} \Big(-b^4 e m^4 n^4 \text{Log}[e+f x]^4 + 4 b^3 e m^3 n^3 \text{Log}[e+f x]^3 (a - b m n + b \text{Log}[c (d (e+f x)^m)^n]) - 6 b^2 e m^2 n^2 \text{Log}[e+f x]^2 \left(a^2 - 2 a b m n + 2 b^2 m^2 n^2 + 2 b (a - b m n) \text{Log}[c (d (e+f x)^m)^n] + b^2 \text{Log}[c (d (e+f x)^m)^n]^2\right) + 4 b e m n \text{Log}[e+f x] \left(a^3 - 3 a^2 b m n + 6 a b^2 m^2 n^2 - 6 b^3 m^3 n^3 + 3 b (a^2 - 2 a b m n + 2 b^2 m^2 n^2) \text{Log}[c (d (e+f x)^m)^n] + 3 b^2 (a - b m n) \text{Log}[c (d (e+f x)^m)^n]^2 + b^3 \text{Log}[c (d (e+f x)^m)^n]^3\right) + f x \Big(a^4 - 4 a^3 b m n + 12 a^2 b^2 m^2 n^2 - 24 a b^3 m^3 n^3 + 24 b^4 m^4 n^4 + 4 b (a^3 - 3 a^2 b m n + 6 a b^2 m^2 n^2 - 6 b^3 m^3 n^3) \text{Log}[c (d (e+f x)^m)^n] + 6 b^2 (a^2 - 2 a b m n + 2 b^2 m^2 n^2) \text{Log}[c (d (e+f x)^m)^n]^2 + 4 b^3 (a - b m n) \text{Log}[c (d (e+f x)^m)^n]^3 + b^4 \text{Log}[c (d (e+f x)^m)^n]^4\Big)\Big)$$

Problem 405: Result more than twice size of optimal antiderivative.

$$\int (a + b \text{Log}[c (d (e+f x)^m)^n])^3 \, dx$$

Optimal (type 3, 121 leaves, 6 steps):

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

Result (type 3, 268 leaves):

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

Problem 411: Unable to integrate problem.

$$\int \left(a + b \text{Log}\left[c \left(d (e + f x)^m\right)^n\right]\right)^{5/2} dx$$

Optimal (type 4, 219 leaves, 8 steps):

$$-\frac{1}{8 f} 15 b^{5/2} e^{-\frac{a}{b m n}} m^{5/2} n^{5/2} \sqrt{\pi} (e + f x) \left(c \left(d (e + f x)^m\right)^n\right)^{-\frac{1}{m n}} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}\left[c \left(d (e + f x)^m\right)^n\right]}}{\sqrt{b} \sqrt{m} \sqrt{n}}\right] + \frac{15 b^2 m^2 n^2 (e + f x) \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^m\right)^n\right]}}{4 f} - \frac{5 b m n (e + f x) \left(a + b \text{Log}\left[c \left(d (e + f x)^m\right)^n\right]\right)^{3/2}}{2 f} + \frac{(e + f x) \left(a + b \text{Log}\left[c \left(d (e + f x)^m\right)^n\right]\right)^{5/2}}{f}$$

Result (type 8, 24 leaves):

$$\int \left(a + b \text{Log}\left[c \left(d (e + f x)^m\right)^n\right]\right)^{5/2} dx$$

Problem 412: Unable to integrate problem.

$$\int \left(a + b \text{Log}\left[c \left(d (e + f x)^m\right)^n\right]\right)^{3/2} dx$$

Optimal (type 4, 176 leaves, 7 steps):

$$\frac{1}{4 f} 3 b^{3/2} e^{-\frac{a}{b m n}} m^{3/2} n^{3/2} \sqrt{\pi} (e + f x) \left(c \left(d (e + f x)^m\right)^n\right)^{-\frac{1}{m n}} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}\left[c \left(d (e + f x)^m\right)^n\right]}}{\sqrt{b} \sqrt{m} \sqrt{n}}\right] - \frac{3 b m n (e + f x) \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^m\right)^n\right]}}{2 f} + \frac{(e + f x) \left(a + b \text{Log}\left[c \left(d (e + f x)^m\right)^n\right]\right)^{3/2}}{f}$$

Result (type 8, 24 leaves):

$$\int \left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^m\right)^n\right]\right)^{3/2}\,dx$$

Problem 413: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 139 leaves, 6 steps):

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

Result (type 1, 1 leaves):

???

Problem 432: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\right)^2}{g+h\,x}\,dx$$

Optimal (type 4, 123 leaves, 5 steps):

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

Result (type 4, 324 leaves):

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

Problem 437: Result more than twice size of optimal antiderivative.

$$\int \left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^3\,dx$$

Optimal (type 3, 121 leaves, 6 steps):

$$6\,a\,b^2\,p^2\,q^2\,x-6\,b^3\,p^3\,q^3\,x+\frac{6\,b^3\,p^2\,q^2\,(e+f\,x)\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}{f}-\frac{3\,b\,p\,q\,(e+f\,x)\,\left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^2}{f}+\frac{(e+f\,x)\,\left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^3}{f}$$

Result (type 3, 268 leaves):

$$\frac{1}{f}\Big(b^3\,e\,p^3\,q^3\,\mathrm{Log}[e+f\,x]^3-3\,b^2\,e\,p^2\,q^2\,\mathrm{Log}[e+f\,x]^2\,\left(a-b\,p\,q+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)+3\,b\,e\,p\,q\,\mathrm{Log}[e+f\,x]\left(a^2-2\,a\,b\,p\,q+2\,b^2\,p^2\,q^2+2\,b\,(a-b\,p\,q)\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]+b^2\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]^2\right)+f\,x\,\Big(a^3-3\,a^2\,b\,p\,q+6\,a\,b^2\,p^2\,q^2-6\,b^3\,p^3\,q^3+3\,b\,\left(a^2-2\,a\,b\,p\,q+2\,b^2\,p^2\,q^2\right)\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]+3\,b^2\,(a-b\,p\,q)\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]^2+b^3\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]^3\Big)\Big)$$

Problem 438: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b\,\mathrm{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^3}{g+h\,x}\,dx$$

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

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

Result (type 4, 646 leaves):

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

Problem 439: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^3}{(g+h x)^2} \, dx$$

Optimal (type 4, 209 leaves, 6 steps):

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

Result (type 4, 444 leaves):

$$\frac{1}{h\,(f g-e h)\,(g+h x)}\Big(-3 b\,(f g-e h)\,p\,q\,\text{Log}[e+f x]\,\big(a-b\,p\,q\,\text{Log}[e+f x]+b\,\text{Log}[c\,(d\,(e+f x)^p)^q]\big)^2+$$
$$3 b f p q\,(g+h x)\,\text{Log}[e+f x]\,\big(a-b\,p\,q\,\text{Log}[e+f x]+b\,\text{Log}[c\,(d\,(e+f x)^p)^q]\big)^2-$$
$$(f g-e h)\,\big(a-b\,p\,q\,\text{Log}[e+f x]+b\,\text{Log}[c\,(d\,(e+f x)^p)^q]\big)^3-$$
$$3 b f p q\,(g+h x)\,\big(a-b\,p\,q\,\text{Log}[e+f x]+b\,\text{Log}[c\,(d\,(e+f x)^p)^q]\big)^2\,\text{Log}[g+h x]+$$
$$3 b^2 p^2 q^2\,\big(a-b\,p\,q\,\text{Log}[e+f x]+b\,\text{Log}[c\,(d\,(e+f x)^p)^q]\big)$$
$$\Big(\text{Log}[e+f x]\,\Big(h\,(e+f x)\,\text{Log}[e+f x]-2 f\,(g+h x)\,\text{Log}\Big[\frac{f\,(g+h x)}{f g-e h}\Big]\Big)-$$
$$2 f\,(g+h x)\,\text{PolyLog}\Big[2,\frac{h\,(e+f x)}{-f g+e h}\Big]\Big)+$$
$$b^3 p^3 q^3\,\Big(\text{Log}[e+f x]^2\,\Big(h\,(e+f x)\,\text{Log}[e+f x]-3 f\,(g+h x)\,\text{Log}\Big[\frac{f\,(g+h x)}{f g-e h}\Big]\Big)-$$
$$6 f\,(g+h x)\,\text{Log}[e+f x]\,\text{PolyLog}\Big[2,\frac{h\,(e+f x)}{-f g+e h}\Big]+6 f\,(g+h x)\,\text{PolyLog}\Big[3,\frac{h\,(e+f x)}{-f g+e h}\Big]\Big)\Big)$$

Problem 441: Result more than twice size of optimal antiderivative.

$$\int\big(a+b\,\text{Log}[c\,(d\,(e+f x)^p)^q]\big)^4\,dx$$

Optimal (type 3, 160 leaves, 7 steps):

$$-24 a b^3 p^3 q^3 x+24 b^4 p^4 q^4 x-\frac{24 b^4 p^3 q^3\,(e+f x)\,\text{Log}[c\,(d\,(e+f x)^p)^q]}{f}+$$
$$\frac{12 b^2 p^2 q^2\,(e+f x)\,\big(a+b\,\text{Log}[c\,(d\,(e+f x)^p)^q]\big)^2}{f}-$$
$$\frac{4 b p q\,(e+f x)\,\big(a+b\,\text{Log}[c\,(d\,(e+f x)^p)^q]\big)^3}{f}+\frac{(e+f x)\,\big(a+b\,\text{Log}[c\,(d\,(e+f x)^p)^q]\big)^4}{f}$$

Result (type 3, 480 leaves):

$$\frac{1}{f}\Big(-b^4 e p^4 q^4\,\text{Log}[e+f x]^4+$$
$$4 b^3 e p^3 q^3\,\text{Log}[e+f x]^3\,\big(a-b p q+b\,\text{Log}[c\,(d\,(e+f x)^p)^q]\big)-6 b^2 e p^2 q^2\,\text{Log}[e+f x]^2$$
$$\big(a^2-2 a b p q+2 b^2 p^2 q^2+2 b\,(a-b p q)\,\text{Log}[c\,(d\,(e+f x)^p)^q]+b^2\,\text{Log}[c\,(d\,(e+f x)^p)^q]^2\big)+$$
$$4 b e p q\,\text{Log}[e+f x]\,\big(a^3-3 a^2 b p q+6 a b^2 p^2 q^2-6 b^3 p^3 q^3+3 b\,(a^2-2 a b p q+2 b^2 p^2 q^2)$$
$$\text{Log}[c\,(d\,(e+f x)^p)^q]+3 b^2\,(a-b p q)\,\text{Log}[c\,(d\,(e+f x)^p)^q]^2+b^3\,\text{Log}[c\,(d\,(e+f x)^p)^q]^3\big)+$$
$$f x\,\big(a^4-4 a^3 b p q+12 a^2 b^2 p^2 q^2-24 a b^3 p^3 q^3+24 b^4 p^4 q^4+$$
$$4 b\,(a^3-3 a^2 b p q+6 a b^2 p^2 q^2-6 b^3 p^3 q^3)\,\text{Log}[c\,(d\,(e+f x)^p)^q]+$$
$$6 b^2\,(a^2-2 a b p q+2 b^2 p^2 q^2)\,\text{Log}[c\,(d\,(e+f x)^p)^q]^2+$$
$$4 b^3\,(a-b p q)\,\text{Log}[c\,(d\,(e+f x)^p)^q]^3+b^4\,\text{Log}[c\,(d\,(e+f x)^p)^q]^4\big)\Big)$$

Problem 442: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]\right)^4}{g+h x} \, dx$$

Optimal (type 4, 231 leaves, 7 steps):

$$\frac{\left(a+b \operatorname{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]\right)^4 \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]}{h}+\frac{4 b p q \left(a+b \operatorname{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]\right)^3 \operatorname{PolyLog}\left[2,-\frac{h (e+f x)}{f g-e h}\right]}{h}-\frac{12 b^2 p^2 q^2 \left(a+b \operatorname{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]\right)^2 \operatorname{PolyLog}\left[3,-\frac{h (e+f x)}{f g-e h}\right]}{h}+\frac{24 b^3 p^3 q^3 \left(a+b \operatorname{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]\right) \operatorname{PolyLog}\left[4,-\frac{h (e+f x)}{f g-e h}\right]}{h}-\frac{24 b^4 p^4 q^4 \operatorname{PolyLog}\left[5,-\frac{h (e+f x)}{f g-e h}\right]}{h}$$

Result (type 4, 1095 leaves):

$$\frac{1}{h}\Big(a^4 \text{Log}[g+h x]-4 a^3 b p q \text{Log}[e+f x] \text{Log}[g+h x]+$$
$$6 a^2 b^2 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}[g+h x]-4 a b^3 p^3 q^3 \text{Log}[e+f x]^3 \text{Log}[g+h x]+$$
$$b^4 p^4 q^4 \text{Log}[e+f x]^4 \text{Log}[g+h x]+4 a^3 b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]-$$
$$12 a^2 b^2 p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]+$$
$$12 a b^3 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]-$$
$$4 b^4 p^3 q^3 \text{Log}[e+f x]^3 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]+$$
$$6 a^2 b^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]-$$
$$12 a b^3 p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]+$$
$$6 b^4 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]+$$
$$4 a b^3 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^3 \text{Log}[g+h x]-$$
$$4 b^4 p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^3 \text{Log}[g+h x]+b^4 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^4 \text{Log}[g+h x]+$$
$$4 a^3 b p q \text{Log}[e+f x] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-6 a^2 b^2 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$$
$$4 a b^3 p^3 q^3 \text{Log}[e+f x]^3 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-b^4 p^4 q^4 \text{Log}[e+f x]^4 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$$
$$12 a^2 b^2 p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-$$
$$12 a b^3 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$$
$$4 b^4 p^3 q^3 \text{Log}[e+f x]^3 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$$
$$12 a b^3 p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-$$
$$6 b^4 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$$
$$4 b^4 p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^3 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$$
$$4 b p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^3 \text{PolyLog}\left[2,\frac{h (e+f x)}{-f g+e h}\right]-$$
$$12 b^2 p^2 q^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2 \text{PolyLog}\left[3,\frac{h (e+f x)}{-f g+e h}\right]+$$
$$24 a b^3 p^3 q^3 \text{PolyLog}\left[4,\frac{h (e+f x)}{-f g+e h}\right]+$$
$$24 b^4 p^3 q^3 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{PolyLog}\left[4,\frac{h (e+f x)}{-f g+e h}\right]-24 b^4 p^4 q^4 \text{PolyLog}\left[5,\frac{h (e+f x)}{-f g+e h}\right]\Big)$$

Problem 443: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^4}{(g+h x)^2} \, dx$$

Optimal (type 4, 274 leaves, 7 steps):

$$\frac{(e+f x)\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^4}{(f g-e h)(g+h x)}-\frac{4 b f p q\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^3 \operatorname{Log}\left[\frac{f(g+h x)}{f g-e h}\right]}{h(f g-e h)}-\frac{12 b^2 f p^2 q^2\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^2 \operatorname{PolyLog}\left[2,-\frac{h(e+f x)}{f g-e h}\right]}{h(f g-e h)}+\frac{24 b^3 f p^3 q^3\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right) \operatorname{PolyLog}\left[3,-\frac{h(e+f x)}{f g-e h}\right]}{h(f g-e h)}-\frac{24 b^4 f p^4 q^4 \operatorname{PolyLog}\left[4,-\frac{h(e+f x)}{f g-e h}\right]}{h(f g-e h)}$$

Result (type 4, 1301 leaves):

$$\frac{1}{h\,(-f g+e h)\,(g+h x)}\Big(a^4 f g-a^4 e h-4 a^3 b f g p q \text{Log}[e+f x]-4 a^3 b f h p q x \text{Log}[e+f x]+6 a^2 b^2 f g p^2 q^2 \text{Log}[e+f x]^2+6 a^2 b^2 f h p^2 q^2 x \text{Log}[e+f x]^2-4 a b^3 f g p^3 q^3 \text{Log}[e+f x]^3-4 a b^3 f h p^3 q^3 x \text{Log}[e+f x]^3+b^4 f g p^4 q^4 \text{Log}[e+f x]^4+b^4 f h p^4 q^4 x \text{Log}[e+f x]^4+4 a^3 b f g \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]-4 a^3 b e h \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]-12 a^2 b^2 f g p q \text{Log}[e+f x] \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]-12 a^2 b^2 f h p q x \text{Log}[e+f x] \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]+12 a b^3 f g p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]+12 a b^3 f h p^2 q^2 x \text{Log}[e+f x]^2 \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]-4 b^4 f g p^3 q^3 \text{Log}[e+f x]^3 \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]-4 b^4 f h p^3 q^3 x \text{Log}[e+f x]^3 \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]+6 a^2 b^2 f g \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^2-6 a^2 b^2 e h \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^2-12 a b^3 f g p q \text{Log}[e+f x] \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^2-12 a b^3 f h p q x \text{Log}[e+f x] \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^2+6 b^4 f g p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^2+6 b^4 f h p^2 q^2 x \text{Log}[e+f x]^2 \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^2+4 a b^3 f g \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^3-4 a b^3 e h \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^3-4 b^4 f g p q \text{Log}[e+f x] \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^3-4 b^4 f h p q x \text{Log}[e+f x] \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^3+b^4 f g \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^4-b^4 e h \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^4+4 a^3 b f g p q \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+4 a^3 b f h p q x \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+12 a^2 b^2 f g p q \text{Log}\left[c\left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+12 a^2 b^2 f h p q x \text{Log}\left[c\left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+12 a b^3 f g p q \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+12 a b^3 f h p q x \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+4 b^4 f g p q \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^3 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+4 b^4 f h p q x \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]^3 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+12 b^2 f p^2 q^2 (g+h x)\left(a+b \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]\right)^2 \text{PolyLog}\left[2,\frac{h (e+f x)}{-f g+e h}\right]-24 b^3 f p^3 q^3 (g+h x)\left(a+b \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]\right) \text{PolyLog}\left[3,\frac{h (e+f x)}{-f g+e h}\right]+24 b^4 f g p^4 q^4 \text{PolyLog}\left[4,\frac{h (e+f x)}{-f g+e h}\right]+24 b^4 f h p^4 q^4 x \text{PolyLog}\left[4,\frac{h (e+f x)}{-f g+e h}\right]\Big)$$

Problem 450: Result more than twice size of optimal antiderivative.

$$\int \frac{(g+h x)^2}{\left(a+b \text{Log}\left[c\left(d (e+f x)^p\right)^q\right]\right)^2}\, dx$$

Optimal (type 4, 326 leaves, 21 steps):

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

Result (type 4, 1310 leaves):

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

Problem 460: Unable to integrate problem.

$$\int \left(g+h x\right)^2 \sqrt{a+b \operatorname{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]}\, dx$$

Optimal (type 4, 488 leaves, 18 steps):

$$-\frac{1}{2 f^3}\sqrt{b}\, e^{-\frac{a}{b p q}} (f g-e h)^2 \sqrt{p}\, \sqrt{\pi}\, \sqrt{q}\, (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b}\, \sqrt{p}\, \sqrt{q}}\right]-\frac{1}{2 f^3}\sqrt{b}\, e^{-\frac{2 a}{b p q}} h (f g-e h) \sqrt{p}\, \sqrt{\frac{\pi}{2}}\, \sqrt{q}\, (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{2}{p q}} \text{Erfi}\left[\frac{\sqrt{2}\, \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b}\, \sqrt{p}\, \sqrt{q}}\right]-\frac{1}{6 f^3}\sqrt{b}\, e^{-\frac{3 a}{b p q}} h^2 \sqrt{p}\, \sqrt{\frac{\pi}{3}}\, \sqrt{q}\, (e+f x)^3 \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{3}{p q}} \text{Erfi}\left[\frac{\sqrt{3}\, \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b}\, \sqrt{p}\, \sqrt{q}}\right]+\frac{(f g-e h)^2 (e+f x) \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{f^3}+\frac{h (f g-e h) (e+f x)^2 \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{f^3}+\frac{h^2 (e+f x)^3 \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{3 f^3}$$

Result (type 8, 32 leaves) :

$$\int (g+h x)^2 \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}\, dx$$

Problem 461: Unable to integrate problem.

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

Optimal (type 4, 311 leaves, 13 steps) :

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

Result (type 8, 30 leaves) :

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

Problem 462: Attempted integration timed out after 120 seconds.

$$\int \sqrt{a + b \, \text{Log}\left[c \left(d \left(e + f x\right)^p\right)^q\right]} \, dx$$

Optimal (type 4, 139 leaves, 6 steps):

$$-\frac{1}{2 f}\sqrt{b} \, e^{-\frac{a}{b p q}} \sqrt{p} \sqrt{\pi} \sqrt{q} \left(e + f x\right) \left(c \left(d \left(e + f x\right)^p\right)^q\right)^{-\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{a + b \, \text{Log}\left[c \left(d \left(e + f x\right)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] + \frac{\left(e + f x\right) \sqrt{a + b \, \text{Log}\left[c \left(d \left(e + f x\right)^p\right)^q\right]}}{f}$$

Result (type 1, 1 leaves):

???

Problem 465: Unable to integrate problem.

$$\int \left(g + h x\right)^2 \left(a + b \, \text{Log}\left[c \left(d \left(e + f x\right)^p\right)^q\right]\right)^{3/2} \, dx$$

Optimal (type 4, 625 leaves, 21 steps):

$$\frac{1}{4 f^3} 3 b^{3/2} e^{-\frac{a}{b p q}} (f g - e h)^2 p^{3/2} \sqrt{\pi} q^{3/2} (e + f x)$$
$$\left(c \left(d (e + f x)^p\right)^q\right)^{-\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] + \frac{1}{8 f^3}$$
$$3 b^{3/2} e^{-\frac{2 a}{b p q}} h (f g - e h) p^{3/2} \sqrt{\frac{\pi}{2}} q^{3/2} (e + f x)^2 \left(c \left(d (e + f x)^p\right)^q\right)^{-\frac{2}{p q}}$$
$$\text{Erfi}\left[\frac{\sqrt{2} \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] + \frac{1}{12 f^3} b^{3/2} e^{-\frac{3 a}{b p q}} h^2 p^{3/2} \sqrt{\frac{\pi}{3}} q^{3/2}$$
$$(e + f x)^3 \left(c \left(d (e + f x)^p\right)^q\right)^{-\frac{3}{p q}} \text{Erfi}\left[\frac{\sqrt{3} \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] -$$
$$\frac{3 b (f g - e h)^2 p q (e + f x) \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{2 f^3} -$$
$$\frac{3 b h (f g - e h) p q (e + f x)^2 \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{4 f^3} -$$
$$\frac{b h^2 p q (e + f x)^3 \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{6 f^3} +$$
$$\frac{(f g - e h)^2 (e + f x) \left(a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^{3/2}}{f^3} +$$
$$\frac{h (f g - e h) (e + f x)^2 \left(a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^{3/2}}{f^3} +$$
$$\frac{h^2 (e + f x)^3 \left(a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^{3/2}}{3 f^3}$$

Result (type 8, 32 leaves) :

$$\int (g + h x)^2 \left(a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^{3/2} dx$$

Problem 466: Unable to integrate problem.

$$\int (g + h x) \left(a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^{3/2} dx$$

Optimal (type 4, 396 leaves, 15 steps) :

$$\frac{1}{4 f^2} 3 b^{3/2} e^{-\frac{a}{b p q}} (f g - e h) p^{3/2} \sqrt{\pi} q^{3/2} (e + f x) \left(c \left(d (e + f x)^p\right)^q\right)^{-\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] + \frac{1}{16 f^2} 3 b^{3/2} e^{-\frac{2 a}{b p q}} h p^{3/2} \sqrt{\frac{\pi}{2}} q^{3/2} (e + f x)^2 \left(c \left(d (e + f x)^p\right)^q\right)^{-\frac{2}{p q}} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] - \frac{3 b (f g - e h) p q (e + f x) \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{2 f^2} - \frac{3 b h p q (e + f x)^2 \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{8 f^2} + \frac{(f g - e h) (e + f x) \left(a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^{3/2}}{f^2} + \frac{h (e + f x)^2 \left(a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^{3/2}}{2 f^2}$$

Result (type 8, 30 leaves):

$$\int (g + h x) \left(a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^{3/2} dx$$

Problem 467: Unable to integrate problem.

$$\int \left(a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^{3/2} dx$$

Optimal (type 4, 176 leaves, 7 steps):

$$\frac{1}{4 f} 3 b^{3/2} e^{-\frac{a}{b p q}} p^{3/2} \sqrt{\pi} q^{3/2} (e + f x) \left(c \left(d (e + f x)^p\right)^q\right)^{-\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] - \frac{3 b p q (e + f x) \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{2 f} + \frac{(e + f x) \left(a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^{3/2}}{f}$$

Result (type 8, 24 leaves):

$$\int \left(a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^{3/2} dx$$

Problem 470: Result more than twice size of optimal antiderivative.

$$\int \frac{(g + h x)^2}{\sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}} dx$$

Optimal (type 4, 355 leaves, 15 steps):

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

$$\frac{1}{\sqrt{b}\, f^3 \sqrt{p}\, \sqrt{q}} e^{-\frac{2 a}{b p q}} h (f g - e h) \sqrt{2 \pi}\, (e + f x)^2 \left(c \left(d (e + f x)^p\right)^q\right)^{-\frac{2}{p q}}$$

$$\text{Erfi}\left[\frac{\sqrt{2}\, \sqrt{a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{\sqrt{b}\, \sqrt{p}\, \sqrt{q}}\right] + \frac{1}{\sqrt{b}\, f^3 \sqrt{p}\, \sqrt{q}}$$

$$e^{-\frac{3 a}{b p q}} h^2 \sqrt{\frac{\pi}{3}}\, (e + f x)^3 \left(c \left(d (e + f x)^p\right)^q\right)^{-\frac{3}{p q}} \text{Erfi}\left[\frac{\sqrt{3}\, \sqrt{a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{\sqrt{b}\, \sqrt{p}\, \sqrt{q}}\right]$$

Result (type 4, 843 leaves) :

$$\frac{1}{3\sqrt{b}\ f^3\sqrt{p}\ \sqrt{q}\ \sqrt{a+b\,\text{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]}}\ e^{-\frac{3a}{b p q}}\sqrt{\pi}\ \left(e+f x\right)\ \left(c\left(d\left(e+f x\right)^p\right)^q\right)^{-\frac{3}{p q}}$$

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

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

$$\text{Erfi}\left[\frac{\sqrt{2}\ \sqrt{a+b\,\text{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]}}{\sqrt{b}\ \sqrt{p}\ \sqrt{q}}\right]\sqrt{a+b\,\text{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]}\ +$$

$$\sqrt{b}\ h\sqrt{p}\ \sqrt{q}\ \left(\sqrt{3}\ e^2+2\sqrt{3}\ e\,f\,x+\sqrt{3}\ f^2 x^2-3\sqrt{2}\ e^2\,e^{\frac{a}{b p q}}\left(c\left(d\left(e+f x\right)^p\right)^q\right)^{\frac{1}{p q}}-\right.$$

$$3\sqrt{2}\ e\,e^{\frac{a}{b p q}}\,f\,x\left(c\left(d\left(e+f x\right)^p\right)^q\right)^{\frac{1}{p q}}+3\,e^2\,e^{\frac{2a}{b p q}}\left(c\left(d\left(e+f x\right)^p\right)^q\right)^{\frac{2}{p q}}-$$

$$3\,e^2\,e^{\frac{2a}{b p q}}\left(c\left(d\left(e+f x\right)^p\right)^q\right)^{\frac{2}{p q}}\text{Erf}\left[\sqrt{-\frac{a+b\,\text{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]}{b\,p\,q}}\ \right]+$$

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

$$\sqrt{3}\ e^2\,\text{Erf}\left[\sqrt{3}\ \sqrt{-\frac{a+b\,\text{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]}{b\,p\,q}}\ \right]-$$

$$2\sqrt{3}\ e\,f\,x\,\text{Erf}\left[\sqrt{3}\ \sqrt{-\frac{a+b\,\text{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]}{b\,p\,q}}\ \right]-$$

$$\left.\left.\left.\sqrt{3}\ f^2 x^2\,\text{Erf}\left[\sqrt{3}\ \sqrt{-\frac{a+b\,\text{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]}{b\,p\,q}}\ \right]\right)\sqrt{-\frac{a+b\,\text{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]}{b\,p\,q}}\ \right)\right)$$

Problem 474: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(g+h\,x\right)^2}{\left(a+b\,\text{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right)^{3/2}}\,dx$$

Optimal (type 4, 404 leaves, 26 steps):

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

Result (type 4, 1680 leaves):

$$\frac{1}{b^{3/2} f^3 p^{3/2} q^{3/2} \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}} 2 e^{-\frac{3 a}{b p q}} \left(c \left(d (e + f x)^p\right)^q\right)^{-\frac{3}{p q}} \left(-\sqrt{b}\, e\, e^{\frac{3 a}{b p q}} f^2 g^2 \sqrt{p} \sqrt{q} \left(c \left(d (e + f x)^p\right)^q\right)^{\frac{3}{p q}} - \sqrt{b}\, e^{\frac{3 a}{b p q}} f^3 g^2 \sqrt{p} \sqrt{q}\, x \left(c \left(d (e + f x)^p\right)^q\right)^{\frac{3}{p q}} - 2 \sqrt{b}\, e\, e^{\frac{3 a}{b p q}} f^2 g h \sqrt{p} \sqrt{q}\, x \left(c \left(d (e + f x)^p\right)^q\right)^{\frac{3}{p q}} - 2 \sqrt{b}\, e^{\frac{3 a}{b p q}} f^3 g h \sqrt{p} \sqrt{q}\, x^2 \left(c \left(d (e + f x)^p\right)^q\right)^{\frac{3}{p q}} - \sqrt{b}\, e\, e^{\frac{3 a}{b p q}} f^2 h^2 \sqrt{p} \sqrt{q}\, x^2 \left(c \left(d (e + f x)^p\right)^q\right)^{\frac{3}{p q}} - \sqrt{b}\, e^{\frac{3 a}{b p q}} f^3 h^2 \sqrt{p} \sqrt{q}\, x^3 \left(c \left(d (e + f x)^p\right)^q\right)^{\frac{3}{p q}} + e^{\frac{2 a}{b p q}} f^2 g^2 \sqrt{\pi} (e + f x) \left(c \left(d (e + f x)^p\right)^q\right)^{\frac{2}{p q}} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]} - 2\, e\, e^{\frac{2 a}{b p q}} f g h \sqrt{\pi} (e + f x) \left(c \left(d (e + f x)^p\right)^q\right)^{\frac{2}{p q}} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]} - 2 e^2 e^{\frac{2 a}{b p q}} h^2 \sqrt{\pi} (e + f x) \left(c \left(d (e + f x)^p\right)^q\right)^{\frac{2}{p q}} \text{Erfi}\left[\frac{\sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]} + 2 e^{\frac{a}{b p q}} f g h \sqrt{2 \pi} (e + f x)^2 \left(c \left(d (e + f x)^p\right)^q\right)^{\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]} + e\, e^{\frac{a}{b p q}} h^2 \sqrt{2 \pi} (e + f x)^2 \left(c \left(d (e + f x)^p\right)^q\right)^{\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] \sqrt{a + b \text{Log}\left[c \left(d (e + f x)^p\right)^q\right]} + \right.$$

$$\sqrt{b}\, h^2 \sqrt{p}\, \sqrt{3\pi}\, \sqrt{q}\, (e+f x)^3 \sqrt{-\frac{a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}} -$$

$$3 \sqrt{b}\, e\, e^{\frac{a}{b p q}} h^2 \sqrt{p}\, \sqrt{2\pi}\, \sqrt{q}\, (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{1}{p q}} \sqrt{-\frac{a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}} +$$

$$3 \sqrt{b}\, e^2 e^{\frac{2 a}{b p q}} h^2 \sqrt{p}\, \sqrt{\pi}\, \sqrt{q}\, (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{2}{p q}} \sqrt{-\frac{a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}} -$$

$$3 \sqrt{b}\, e^2 e^{\frac{2 a}{b p q}} h^2 \sqrt{p}\, \sqrt{\pi}\, \sqrt{q}\, (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{2}{p q}} \operatorname{Erf}\left[\sqrt{-\frac{a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}}\right]$$

$$\sqrt{-\frac{a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}} + 3 \sqrt{b}\, e\, e^{\frac{a}{b p q}} h^2 \sqrt{p}\, \sqrt{2\pi}\, \sqrt{q}\, (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{1}{p q}}$$

$$\operatorname{Erf}\left[\sqrt{2} \sqrt{-\frac{a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}}\right] \sqrt{-\frac{a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}} - \sqrt{b}\, h^2 \sqrt{p}\, \sqrt{3\pi}$$

$$\left.\sqrt{q}\, (e+f x)^3 \operatorname{Erf}\left[\sqrt{3} \sqrt{-\frac{a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}}\right] \sqrt{-\frac{a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}}\right)$$

Problem 478: Result more than twice size of optimal antiderivative.

$$\int \frac{(g+h x)^2}{\left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{5/2}} \, dx$$

Optimal (type 4, 514 leaves, 42 steps):

$$\frac{1}{3\,b^{5/2}\,f^3\,p^{5/2}\,q^{5/2}}$$

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

$$\frac{1}{3\,b^{5/2}\,f^3\,p^{5/2}\,q^{5/2}}16\,e^{-\frac{2\,a}{b\,p\,q}}\,h\,(f\,g-e\,h)\,\sqrt{2\,\pi}\,\,(e+f\,x)^2\,\left(c\,\left(d\,(e+f\,x)^p\right)^q\right)^{-\frac{2}{p\,q}}$$

$$\text{Erfi}\left[\frac{\sqrt{2}\,\sqrt{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right]+\frac{1}{b^{5/2}\,f^3\,p^{5/2}\,q^{5/2}}$$

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

$$\frac{2\,(e+f\,x)\,(g+h\,x)^2}{3\,b\,f\,p\,q\,\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^{3/2}}+$$

$$\frac{8\,(f\,g-e\,h)\,(e+f\,x)\,(g+h\,x)}{3\,b^2\,f^2\,p^2\,q^2\,\sqrt{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}}-\frac{4\,(e+f\,x)\,(g+h\,x)^2}{b^2\,f\,p^2\,q^2\,\sqrt{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}}$$

Result (type 4, 6490 leaves) :

$$\Bigg(4$$

$$e^{-\frac{a+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\,\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}\right.}{}}\right.\right.}{b\,p\,q}}$$

$$g^2\,\sqrt{\pi}\,\,\text{Erfi}\Bigg[\frac{1}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}$$

$$\left(\sqrt{\left(a+b\,\left(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\right.\right.}\right.$$

$$\left.\left.\left.\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)\right)\Bigg]$$

$$\sqrt{\left(a+b\,\left(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\right.\right.}$$

$$\left.\left.\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)\Bigg)\Big/$$

$$\left(3\,b^{5/2}\,f\,p^{5/2}\,q^{5/2}\,\sqrt{\left(a+b\,p\,q\,\text{Log}[e+f\,x]+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+\right.}\right.$$

$$b\left(-q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\right.$$

$$\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+$$

$$\left.\left.\left.\text{Log}\left[c\,e^{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\left(d\,(e+f\,x)^p\right)^{q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)\right)+\left(8\,e\right.$$

$$e^{-\frac{a+b\,q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\left(-q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\left(d\,(e+f\,x)^p\right)^{q-\frac{q\left(-p\,\text{Log}\right.}{}}\right.\right.}{b\,p\,q}}$$

$$g\,h\,\sqrt{\pi}\;\text{Erfi}\left[\frac{1}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right.$$

$$\left(\sqrt{\left(a+b\left(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\right.\right.}\right.$$

$$\left.\left.\left.\left.\left.\text{Log}\left[c\,e^{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\left(d\,(e+f\,x)^p\right)^{q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)\right)\right]$$

$$\sqrt{\left(a+b\left(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\right.\right.}$$

$$\left.\left.\left.\text{Log}\left[c\,e^{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\left(d\,(e+f\,x)^p\right)^{q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)\right)\Big/$$

$$\left(b^{5/2}\,f^2\,p^{5/2}\,q^{5/2}\sqrt{\left(a+b\,p\,q\,\text{Log}[e+f\,x]+b\,q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+\right.}\right.$$

$$b\left(-q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\right.$$

$$\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+$$

$$\left.\left.\left.\text{Log}\left[c\,e^{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\left(d\,(e+f\,x)^p\right)^{q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)\right)+\left(8\,e^2\right.$$

$$e^{-\frac{a+b\,q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\left(-q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\left(d\,(e+f\,x)^p\right)^{q-\frac{q\left(-p\,\text{Log}\right.}{}}\right.\right.}{b\,p\,q}}$$

$$h^2 \sqrt{\pi}\ \text{Erfi}\Big[\frac{1}{\sqrt{b}\ \sqrt{p}\ \sqrt{q}}$$

$$\Bigg(\sqrt{\Bigg(a+b\ \Bigg(p\ q\ \text{Log}[e+f\ x]-\text{Log}\big[d\ (e+f\ x)^p\big]\ \left(q-\frac{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\big[d\ (e+f\ x)^p\big]\right)}{\text{Log}\big[d\ (e+f\ x)^p\big]}\right)+}$$

$$\text{Log}\Big[c\ e^{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\left[d\ (e+f\ x)^p\right]\right)}\ \left(d\ (e+f\ x)^p\right)^{q-\frac{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\left[d\ (e+f\ x)^p\right]\right)}{\text{Log}\left[d\ (e+f\ x)^p\right]}}\Big]\Bigg)\Bigg)\Bigg)\Big]$$

$$\sqrt{\Bigg(a+b\ \Bigg(p\ q\ \text{Log}[e+f\ x]-\text{Log}\big[d\ (e+f\ x)^p\big]\ \left(q-\frac{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\big[d\ (e+f\ x)^p\big]\right)}{\text{Log}\big[d\ (e+f\ x)^p\big]}\right)+}$$

$$\text{Log}\Big[c\ e^{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\left[d\ (e+f\ x)^p\right]\right)}\ \left(d\ (e+f\ x)^p\right)^{q-\frac{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\left[d\ (e+f\ x)^p\right]\right)}{\text{Log}\left[d\ (e+f\ x)^p\right]}}\Big]\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\ b^{5/2}\ f^3\ p^{5/2}\ q^{5/2}\ \sqrt{\Bigg(a+b\ p\ q\ \text{Log}[e+f\ x]+b\ q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\big[d\ (e+f\ x)^p\big]\right)+}$$

$$b\ \Bigg(-q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\big[d\ (e+f\ x)^p\big]\right)-$$

$$\text{Log}\big[d\ (e+f\ x)^p\big]\ \left(q-\frac{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\big[d\ (e+f\ x)^p\big]\right)}{\text{Log}\big[d\ (e+f\ x)^p\big]}\right)+$$

$$\text{Log}\Big[c\ e^{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\left[d\ (e+f\ x)^p\right]\right)}\ \left(d\ (e+f\ x)^p\right)^{q-\frac{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\left[d\ (e+f\ x)^p\right]\right)}{\text{Log}\left[d\ (e+f\ x)^p\right]}}\Big]\Bigg)\Bigg)\Bigg)+$$

$$\Bigg(16\ e^{-\frac{2\ \left(a+b\ \left(-\text{Log}\left[d\ (e+f\ x)^p\right]\ \left(q-\frac{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\left[d\ (e+f\ x)^p\right]\right)}{\text{Log}\left[d\ (e+f\ x)^p\right]}\right)+\text{Log}\left[c\ e^{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\left[d\ (e+f\ x)^p\right]\right)}\ \left(d\ (e+f\ x)^p\right)^{q-\frac{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\left[d\ (e+f\ x)^p\right]\right)}{\text{Log}\left[d\ (e+f\ x)^p\right]}}\right]\right)\right)}{b\ p\ q}}$$

$$g\ h\ \sqrt{\pi}\ \Bigg(-2\ e$$

$$e^{\frac{a+b\ q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\left[d\ (e+f\ x)^p\right]\right)+b\ \left(-q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\left[d\ (e+f\ x)^p\right]\right)-\text{Log}\left[d\ (e+f\ x)^p\right]\ \left(q-\frac{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\left[d\ (e+f\ x)^p\right]\right)}{\text{Log}\left[d\ (e+f\ x)^p\right]}\right)+\text{Log}\left[c\ e^{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\left[d\ (e+f\ x)^p\right]\right)}\ \left(d\ (e+f\ x)^p\right)^{q-\frac{q}{}}\right.\right.}{b\ p\ q}}$$

$$\text{Erfi}\Big[\frac{1}{\sqrt{b}\ \sqrt{p}\ \sqrt{q}}$$

$$\Bigg(\sqrt{\Bigg(a+b\ \Bigg(p\ q\ \text{Log}[e+f\ x]-\text{Log}\big[d\ (e+f\ x)^p\big]\ \left(q-\frac{q\ \left(-p\ \text{Log}[e+f\ x]+\text{Log}\big[d\ (e+f\ x)^p\big]\right)}{\text{Log}\big[d\ (e+f\ x)^p\big]}\right)+}$$

$$\text{Log}\left[c\, e^{q\,(-p\,\text{Log}[e+f x]+\text{Log}[d\,(e+f x)^p])}\,\left(d\,(e+f x)^p\right)^{q-\frac{q\,(-p\,\text{Log}[e+f x]+\text{Log}[d\,(e+f x)^p])}{\text{Log}[d\,(e+f x)^p]}}\right]\Bigg)\Bigg)\Bigg)\Bigg] +$$

$$\sqrt{2}\ \text{Erfi}\Bigg[\frac{1}{\sqrt{b}\ \sqrt{p}\ \sqrt{q}}\sqrt{2}\ \sqrt{\Bigg(a+b\,\Bigg(p\,q\,\text{Log}[e+f x]-\text{Log}\left[d\,(e+f x)^p\right]}$$

$$\left(q-\frac{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+\text{Log}\Big[$$

$$c\, e^{q\,(-p\,\text{Log}[e+f x]+\text{Log}[d\,(e+f x)^p])}\,\left(d\,(e+f x)^p\right)^{q-\frac{q\,(-p\,\text{Log}[e+f x]+\text{Log}[d\,(e+f x)^p])}{\text{Log}[d\,(e+f x)^p]}}\Big]\Bigg)\Bigg)\Bigg]\Bigg)$$

$$\sqrt{\Bigg(a+b\,\Bigg(p\,q\,\text{Log}[e+f x]-\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+}$$

$$\text{Log}\left[c\, e^{q\,(-p\,\text{Log}[e+f x]+\text{Log}[d\,(e+f x)^p])}\,\left(d\,(e+f x)^p\right)^{q-\frac{q\,(-p\,\text{Log}[e+f x]+\text{Log}[d\,(e+f x)^p])}{\text{Log}[d\,(e+f x)^p]}}\right]\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,b^{5/2}\,f^2\,p^{5/2}\,q^{5/2}\sqrt{\Bigg(a+b\,p\,q\,\text{Log}[e+f x]+b\,q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)+}$$

$$b\,\Bigg(-q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)-$$

$$\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+$$

$$\text{Log}\left[c\, e^{q\,(-p\,\text{Log}[e+f x]+\text{Log}[d\,(e+f x)^p])}\,\left(d\,(e+f x)^p\right)^{q-\frac{q\,(-p\,\text{Log}[e+f x]+\text{Log}[d\,(e+f x)^p])}{\text{Log}[d\,(e+f x)^p]}}\right]\Bigg)\Bigg)\Bigg)+$$

$$\Bigg(20\,e\, e^{-\frac{2\left(a+b\left(-\text{Log}[d\,(e+f x)^p]\left(q-\frac{q\,(-p\,\text{Log}[e+f x]+\text{Log}[d\,(e+f x)^p])}{\text{Log}[d\,(e+f x)^p]}\right)+\text{Log}\left[c\,e^{q\,(-p\,\text{Log}[e+f x]+\text{Log}[d\,(e+f x)^p])}\,(d\,(e+f x)^p)^{q-\frac{q\,(-p\,\text{Log}[e+f x]+\text{Log}[d\,(e+f x)^p])}{\text{Log}[d\,(e+f x)^p]}}\right]\right)\right)}{b\,p\,q}}$$

$$h^2$$

$$\sqrt{\pi}$$

$$\Bigg(-2\,e$$

$$e^{\frac{a+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)+b\,\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)-\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}{\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q-\frac{q}{\ }}\right.\right.}{b\,p\,q}}$$

$$\text{Erfi}\Big[\frac{1}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}$$

$$\left(\sqrt{\left(a+b\,\left(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}{\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]}\right)+\right.\right.}\right.$$

$$\left.\left.\left.\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}{\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]}}\right]\right)\right)\right)\Big]+$$

$$\sqrt{2}\,\text{Erfi}\Big[\frac{1}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\sqrt{2}\,\sqrt{\left(a+b\,\left(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right.\right.}$$

$$\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}{\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]}\right)+\text{Log}\Big[$$

$$\left.\left.\left.c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}{\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]}}\Big]\right)\right)\Big]\right)$$

$$\sqrt{\left(a+b\,\left(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}{\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]}\right)+\right.\right.}$$

$$\left.\left.\left.\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}{\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]}}\right]\right)\right)\right)\Big/$$

$$\left(3\,b^{5/2}\,f^{3}\,p^{5/2}\,q^{5/2}\,\sqrt{\left(a+b\,p\,q\,\text{Log}[e+f\,x]+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)+\right.}\right.$$

$$b\,\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)-\right.$$

$$\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}{\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]}\right)+$$

$$\left.\left.\left.\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}{\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]}}\right]\right)\right)\right)+$$

$$\left(4\,e^{-\frac{3\,\left(a+b\,\left(-\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}{\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]\right)}{\text{Log}\left[d\,\left(e+f\,x\right)^{p}\right]}}\right]\right)\right)}{b\,p\,q}}\right.$$

$$h^{2}$$

$$\sqrt{\pi}$$

$$\Bigg(\sqrt{3}-3\sqrt{2}\; e$$

$$e^{\frac{a+b\,q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\left(-q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\left(d\,(e+f\,x)^p\right)^{q-\frac{q}{}}\right.\right.}{b\,p\,q}}$$

$$+$$

$$3$$

$$e^2$$

$$e^{\frac{2\left(a+b\,q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\left(-q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\left(d\,(e+f\,x)^p\right)^{q}\right.\right.\right.}{b\,p\,q}}$$

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

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

$$e^{\frac{a+b\,q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\left(-q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\left(d\,(e+f\,x)^p\right)^{q-\frac{q}{}}\right.\right.}{b\,p\,q}}$$

$$\text{Erf}\Bigg[\sqrt{2}\sqrt{\left(-\frac{1}{b\,p\,q}\left(a+b\left(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\left(d\,(e+f\,x)^p\right)^{q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)\right)}\Bigg]-$$

$$\sqrt{3}\;\text{Erf}\Bigg[\sqrt{3}\sqrt{\left(-\frac{1}{b\,p\,q}\left(a+b\left(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\right.\right.\right.\right.}$$

$$\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\Big]\Big)\Big)\Big)\Big]\Bigg)\sqrt{\Big(-\frac{1}{b\,p\,q}}$$

$$\Bigg(a+b\,\Bigg(p\,q\,\text{Log}[e+f\,x]-\text{Log}\big[d\,(e+f\,x)^p\big]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\right)}{\text{Log}\big[d\,(e+f\,x)^p\big]}\right)+$$

$$\text{Log}\Big[c\,e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\Big]\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(b^2\,f^3\,p^2\,q^2\,\sqrt{\Big(}a+b\,p\,q\,\text{Log}[e+f\,x]+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\right)+$$

$$b\,\Bigg(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\right)-$$

$$\text{Log}\big[d\,(e+f\,x)^p\big]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\right)}{\text{Log}\big[d\,(e+f\,x)^p\big]}\right)+$$

$$\text{Log}\Big[c\,e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\Big]\Bigg)\Bigg)\Bigg)+$$

$$\sqrt{\Big(}a+b\,p\,q\,\text{Log}[e+f\,x]+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\right)+$$

$$b\,\Bigg(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\right)-$$

$$\text{Log}\big[d\,(e+f\,x)^p\big]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\right)}{\text{Log}\big[d\,(e+f\,x)^p\big]}\right)+$$

$$\text{Log}\Big[c\,e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\Big]\Bigg)\Bigg)$$

$$\Bigg(-\Bigg(\left(2\,(e+f\,x)\,(g+h\,x)^2\right)\Bigg/\Bigg(3\,b\,f\,p\,q\,\Bigg(a+b\,p\,q\,\text{Log}[e+f\,x]+b\,q\,\Big(-p\,\text{Log}[e+f\,x]+$$

$$\text{Log}\big[d\,(e+f\,x)^p\big]\Big)+b\,\Bigg(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\right)-$$

$$\text{Log}\big[d\,(e+f\,x)^p\big]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\right)}{\text{Log}\big[d\,(e+f\,x)^p\big]}\right)+$$

$$\text{Log}\Big[c\,e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\Big]\Bigg)\Bigg)^2\Bigg)\Bigg)-$$

$$\left(4\,(e+f\,x)\,(g+h\,x)\,(f\,g+2\,e\,h+3\,f\,h\,x)\right)\Big/\Big(3\,b^2\,f^2\,p^2\,q^2\,\Big(a+b\,p\,q\,\text{Log}[e+f\,x]+$$

$$b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\Bigg)\Bigg)$$

Problem 489: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (g+h\,x)^{3/2}\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^2\,dx$$

Optimal (type 4, 635 leaves, 29 steps):

$$\frac{368\,b^2\,(f\,g-e\,h)^2\,p^2\,q^2\,\sqrt{g+h\,x}}{75\,f^2\,h}+\frac{128\,b^2\,(f\,g-e\,h)\,p^2\,q^2\,(g+h\,x)^{3/2}}{225\,f\,h}+\frac{16\,b^2\,p^2\,q^2\,(g+h\,x)^{5/2}}{125\,h}-\frac{368\,b^2\,(f\,g-e\,h)^{5/2}\,p^2\,q^2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]}{75\,f^{5/2}\,h}-\frac{8\,b^2\,(f\,g-e\,h)^{5/2}\,p^2\,q^2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]^2}{5\,f^{5/2}\,h}-\frac{8\,b\,(f\,g-e\,h)^2\,p\,q\,\sqrt{g+h\,x}\,\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)}{5\,f^2\,h}-\frac{8\,b\,(f\,g-e\,h)\,p\,q\,(g+h\,x)^{3/2}\,\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)}{15\,f\,h}-\frac{8\,b\,p\,q\,(g+h\,x)^{5/2}\,\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)}{25\,h}+\frac{8\,b\,(f\,g-e\,h)^{5/2}\,p\,q\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)}{5\,f^{5/2}\,h}+\frac{2\,(g+h\,x)^{5/2}\,\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^2}{5\,h}+\frac{16\,b^2\,(f\,g-e\,h)^{5/2}\,p^2\,q^2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}}\right]}{5\,f^{5/2}\,h}+\frac{8\,b^2\,(f\,g-e\,h)^{5/2}\,p^2\,q^2\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}}\right]}{5\,f^{5/2}\,h}$$

Result (type 5, 2450 leaves):

$$\frac{1}{3\,f\,h\,\sqrt{1+\frac{h\,(e+f\,x)}{f\,g-e\,h}}}\,2\,b^2\,g\,p^2\,q^2\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}$$

$$\left(3\,h\,(e+f\,x)\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1,1\right\},\{2,2,2\},\frac{h\,(e+f\,x)}{-f\,g+e\,h}\right]-\right.$$

$$3\,h\,(e+f\,x)\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{h\,(e+f\,x)}{-f\,g+e\,h}\right]\,\text{Log}[e+f\,x]-$$

$$f\,g\,\text{Log}[e+f\,x]^2+e\,h\,\text{Log}[e+f\,x]^2+f\,g\,\sqrt{1+\frac{h\,(e+f\,x)}{f\,g-e\,h}}\,\text{Log}[e+f\,x]^2-$$

$$\left.e\,h\,\sqrt{1+\frac{h\,(e+f\,x)}{f\,g-e\,h}}\,\text{Log}[e+f\,x]^2+h\,(e+f\,x)\,\sqrt{1+\frac{h\,(e+f\,x)}{f\,g-e\,h}}\,\text{Log}[e+f\,x]^2\right)-$$

$$\frac{1}{15\,f^2\,h\,\sqrt{1+\frac{h\,(e+f\,x)}{f\,g-e\,h}}}\,2\,b^2\,p^2\,q^2\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}$$

$$\left(10\,f\,g\,h\,(e+f\,x)\,\text{HypergeometricPFQ}\left[\left\{-\frac{3}{2},1,1,1\right\},\{2,2,2\},\frac{h\,(e+f\,x)}{-f\,g+e\,h}\right]-\right.$$

$$10\,e\,h^2\,(e+f\,x)\,\text{HypergeometricPFQ}\left[\left\{-\frac{3}{2},1,1,1\right\},\{2,2,2\},\frac{h\,(e+f\,x)}{-f\,g+e\,h}\right]+15\,e\,h^2$$

$$(e+f\,x)\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1,1\right\},\{2,2,2\},\frac{h\,(e+f\,x)}{-f\,g+e\,h}\right]-4\,f^2\,g^2\,\text{Log}[e+f\,x]+$$

$$8\,e\,f\,g\,h\,\text{Log}[e+f\,x]-4\,e^2\,h^2\,\text{Log}[e+f\,x]+4\,f^2\,g^2\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}\,\text{Log}[e+f\,x]-$$

$$8\,e\,f\,g\,h\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}\,\text{Log}[e+f\,x]+4\,e^2\,h^2\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}\,\text{Log}[e+f\,x]+$$

$$8\,f\,g\,h\,(e+f\,x)\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}\,\text{Log}[e+f\,x]-8\,e\,h^2\,(e+f\,x)$$

$$\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}\,\text{Log}[e+f\,x]+4\,h^2\,(e+f\,x)^2\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}\,\text{Log}[e+f\,x]-$$

$$15\,e\,h^2\,(e+f\,x)\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{h\,(e+f\,x)}{-f\,g+e\,h}\right]\,\text{Log}[e+f\,x]-$$

$$2\,f^2\,g^2\,\text{Log}[e+f\,x]^2-e\,f\,g\,h\,\text{Log}[e+f\,x]^2+3\,e^2\,h^2\,\text{Log}[e+f\,x]^2+$$

$$2 f^2 g^2 \sqrt{\frac{f g - e h + h (e + f x)}{f g - e h}} \text{Log}[e + f x]^2 + e f g h \sqrt{\frac{f g - e h + h (e + f x)}{f g - e h}} \text{Log}[e + f x]^2 -$$

$$3 e^2 h^2 \sqrt{\frac{f g - e h + h (e + f x)}{f g - e h}} \text{Log}[e + f x]^2 - f g h (e + f x) \sqrt{\frac{f g - e h + h (e + f x)}{f g - e h}}$$

$$\text{Log}[e + f x]^2 + 6 e h^2 (e + f x) \sqrt{\frac{f g - e h + h (e + f x)}{f g - e h}} \text{Log}[e + f x]^2 -$$

$$3 h^2 (e + f x)^2 \sqrt{\frac{f g - e h + h (e + f x)}{f g - e h}} \text{Log}[e + f x]^2 + 10 h (-f g + e h) (e + f x)$$

$$\left.\text{HypergeometricPFQ}\left[\left\{-\frac{3}{2}, 1, 1\right\}, \{2, 2\}, \frac{h (e + f x)}{-f g + e h}\right] (1 + \text{Log}[e + f x])\right) +$$

$$\frac{1}{9 f h} 4 b g p q \left(\frac{6 (f g - e h)^{3/2} \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{\frac{f g - e h + h (e + f x)}{f}}}{\sqrt{f g - e h}}\right]}{\sqrt{f}} -\right.$$

$$\left.\sqrt{\frac{f g - e h + h (e + f x)}{f}} (h (e + f x) (2 - 3 \text{Log}[e + f x]) + (f g - e h) (8 - 3 \text{Log}[e + f x]))\right)$$

$$\left(a + b q (-p \text{Log}[e + f x] + \text{Log}[d (e + f x)^p]) + b \left(-q (-p \text{Log}[e + f x] + \text{Log}[d (e + f x)^p]) -\right.\right.$$

$$\text{Log}[d (e + f x)^p] \left(q - \frac{q (-p \text{Log}[e + f x] + \text{Log}[d (e + f x)^p])}{\text{Log}[d (e + f x)^p]}\right) +$$

$$\left.\left.\text{Log}\left[c\, e^{q (-p \text{Log}[e+f x] + \text{Log}[d (e+f x)^p])} (d (e + f x)^p)^{q - \frac{q (-p \text{Log}[e+f x] + \text{Log}[d (e+f x)^p])}{\text{Log}[d (e+f x)^p]}}\right]\right)\right) -$$

$$\frac{1}{225 f^{5/2} h} 4 b p q \left(30 (f g - e h)^{3/2} (2 f g + 3 e h) \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{\frac{f g - e h + h (e + f x)}{f}}}{\sqrt{f g - e h}}\right] +\right.$$

$$\sqrt{f} \sqrt{\frac{f g - e h + h (e + f x)}{f}} \left(9 h^2 (e + f x)^2 (2 - 5 \text{Log}[e + f x]) +\right.$$

$$(f g - e h) (3 e h (-46 + 15 \text{Log}[e + f x]) + 2 f g (-31 + 15 \text{Log}[e + f x])) +$$

$$h\,(e+f x)\,\left(f g\,(16-15\,\text{Log}[e+f x])+6\,e\,h\,(-11+15\,\text{Log}[e+f x])\right)\Bigg)$$

$$\Bigg(a+b\,q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)+b\,\Bigg(-q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)-$$
$$\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+$$
$$\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}\left(d\,(e+f x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}}\right]\Bigg)\Bigg)+\sqrt{g+h x}$$

$$\Bigg(\frac{1}{5\,h}2\,g^2\,\Bigg(a+b\,q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)+b\,\Bigg(-q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)-$$
$$\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+$$
$$\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}\left(d\,(e+f x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}}\right]\Bigg)\Bigg)^2+$$

$$\frac{4}{5}\,g\,x\,\Bigg(a+b\,q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)+b\,\Bigg(-q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)-$$
$$\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+$$
$$\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}\left(d\,(e+f x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}}\right]\Bigg)\Bigg)^2+$$

$$\frac{2}{5}\,h\,x^2\,\Bigg(a+b\,q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)+b\,\Bigg(-q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)-$$
$$\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+$$
$$\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}\left(d\,(e+f x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}}\right]\Bigg)\Bigg)^2\Bigg)$$

Problem 490: Result unnecessarily involves higher level functions.

$$\int\sqrt{g+h x}\,\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f x)^p\right)^q\right]\right)^2\,dx$$

Optimal (type 4, 547 leaves, 22 steps):

$$\frac{64\,b^2\,(f\,g-e\,h)\,p^2\,q^2\,\sqrt{g+h\,x}}{9\,f\,h}+\frac{16\,b^2\,p^2\,q^2\,(g+h\,x)^{3/2}}{27\,h}-$$

$$\frac{64\,b^2\,(f\,g-e\,h)^{3/2}\,p^2\,q^2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]}{9\,f^{3/2}\,h}-\frac{8\,b^2\,(f\,g-e\,h)^{3/2}\,p^2\,q^2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]^2}{3\,f^{3/2}\,h}-$$

$$\frac{8\,b\,(f\,g-e\,h)\,p\,q\,\sqrt{g+h\,x}\,\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)}{3\,f\,h}-$$

$$\frac{8\,b\,p\,q\,(g+h\,x)^{3/2}\,\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)}{9\,h}+$$

$$\frac{8\,b\,(f\,g-e\,h)^{3/2}\,p\,q\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]\,\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)}{3\,f^{3/2}\,h}+$$

$$\frac{2\,(g+h\,x)^{3/2}\,\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^2}{3\,h}+$$

$$\frac{16\,b^2\,(f\,g-e\,h)^{3/2}\,p^2\,q^2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}}\right]}{3\,f^{3/2}\,h}+$$

$$\frac{8\,b^2\,(f\,g-e\,h)^{3/2}\,p^2\,q^2\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}}\right]}{3\,f^{3/2}\,h}$$

Result (type 5, 365 leaves) :

$$\frac{1}{9h}2\left(\frac{1}{f\sqrt{\frac{f(g+hx)}{fg-eh}}}3b^2p^2q^2\sqrt{g+hx}\left(3h(e+fx)\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1,1\right\},\{2,2,2\},\frac{h(e+fx)}{-fg+eh}\right]+\text{Log}[e+fx]\left(-3h(e+fx)\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{h(e+fx)}{-fg+eh}\right]+\left(eh+fhx\sqrt{\frac{f(g+hx)}{fg-eh}}+fg\left(-1+\sqrt{\frac{f(g+hx)}{fg-eh}}\right)\right)\text{Log}[e+fx]\right)\right)-\frac{1}{f^{3/2}}2bpq\left(6(fg-eh)^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right]+\sqrt{f}\sqrt{g+hx}\left(6eh-2f(4g+hx)+3f(g+hx)\,\text{Log}[e+fx]\right)\right)\left(-a+bpq\,\text{Log}[e+fx]-b\,\text{Log}\left[c\left(d(e+fx)^p\right)^q\right]\right)+3(g+hx)^{3/2}\left(a-bpq\,\text{Log}[e+fx]+b\,\text{Log}\left[c\left(d(e+fx)^p\right)^q\right]\right)^2\right)$$

Problem 491: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+b\,\text{Log}\left[c\left(d(e+fx)^p\right)^q\right]\right)^2}{\sqrt{g+hx}}\,dx$$

Optimal (type 4, 447 leaves, 16 steps) :

$$\frac{16\,b^2\,p^2\,q^2\,\sqrt{g+h\,x}}{h}-\frac{16\,b^2\,\sqrt{f\,g-e\,h}\;p^2\,q^2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]}{\sqrt{f}\;h}-$$

$$\frac{8\,b^2\,\sqrt{f\,g-e\,h}\;p^2\,q^2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]^2}{\sqrt{f}\;h}-\frac{8\,b\,p\,q\,\sqrt{g+h\,x}\;\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\right)}{h}+$$

$$\frac{8\,b\,\sqrt{f\,g-e\,h}\;p\,q\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]\;\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\right)}{\sqrt{f}\;h}+$$

$$\frac{2\,\sqrt{g+h\,x}\;\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\right)^2}{h}+$$

$$\frac{16\,b^2\,\sqrt{f\,g-e\,h}\;p^2\,q^2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]\;\text{Log}\left[\frac{2}{1-\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}}\right]}{\sqrt{f}\;h}+$$

$$\frac{8\,b^2\,\sqrt{f\,g-e\,h}\;p^2\,q^2\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}}\right]}{\sqrt{f}\;h}$$

Result (type 5, 646 leaves) :

$$\frac{1}{f h \sqrt{g+h x}} 2 \Bigg(a^2 f g - 4 a b f g p q + a^2 f h x - 4 a b f h p q x + 4 a b \sqrt{f} \sqrt{f g - e h} p q \sqrt{g+h x} \operatorname{ArcTanh}\Big[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g - e h}}\Big] + b^2 h p^2 q^2 (e+f x) \sqrt{\frac{f (g+h x)}{f g - e h}} \operatorname{HypergeometricPFQ}\Big[\Big\{\frac{1}{2}, 1, 1, 1\Big\}, \{2, 2, 2\}, \frac{h (e+f x)}{-f g+e h}\Big] + 4 b^2 f g p^2 q^2 \operatorname{Log}[e+f x] + 4 b^2 f h p^2 q^2 x \operatorname{Log}[e+f x] - 4 b^2 \sqrt{f} \sqrt{f g - e h} p^2 q^2 \sqrt{g+h x} \operatorname{ArcTanh}\Big[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g - e h}}\Big] \operatorname{Log}[e+f x] - b^2 h p^2 q^2 (e+f x) \sqrt{\frac{f (g+h x)}{f g - e h}} \operatorname{HypergeometricPFQ}\Big[\Big\{\frac{1}{2}, 1, 1\Big\}, \{2, 2\}, \frac{h (e+f x)}{-f g+e h}\Big] \operatorname{Log}[e+f x] - b^2 f g p^2 q^2 \sqrt{\frac{f (g+h x)}{f g - e h}} \operatorname{Log}[e+f x]^2 + b^2 e h p^2 q^2 \sqrt{\frac{f (g+h x)}{f g - e h}} \operatorname{Log}[e+f x]^2 + 2 a b f g \operatorname{Log}\big[c \big(d (e+f x)^p\big)^q\big] - 4 b^2 f g p q \operatorname{Log}\big[c \big(d (e+f x)^p\big)^q\big] + 2 a b f h x \operatorname{Log}\big[c \big(d (e+f x)^p\big)^q\big] - 4 b^2 f h p q x \operatorname{Log}\big[c \big(d (e+f x)^p\big)^q\big] + 4 b^2 \sqrt{f} \sqrt{f g - e h} p q \sqrt{g+h x} \operatorname{ArcTanh}\Big[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g - e h}}\Big] \operatorname{Log}\big[c \big(d (e+f x)^p\big)^q\big] + b^2 f g \operatorname{Log}\big[c \big(d (e+f x)^p\big)^q\big]^2 + b^2 f h x \operatorname{Log}\big[c \big(d (e+f x)^p\big)^q\big]^2\Bigg)$$

Problem 492: Result unnecessarily involves higher level functions.

$$\int \frac{\big(a + b \operatorname{Log}\big[c \big(d (e+f x)^p\big)^q\big]\big)^2}{(g+h x)^{3/2}} \, dx$$

Optimal (type 4, 330 leaves, 11 steps):

$$\frac{8 b^2 \sqrt{f} p^2 q^2 \operatorname{ArcTanh}\Big[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\Big]^2}{h \sqrt{f g - e h}} - \frac{8 b \sqrt{f} p q \operatorname{ArcTanh}\Big[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\Big] \big(a + b \operatorname{Log}\big[c \big(d (e+f x)^p\big)^q\big]\big)}{h \sqrt{f g - e h}} - \frac{2 \big(a + b \operatorname{Log}\big[c \big(d (e+f x)^p\big)^q\big]\big)^2}{h \sqrt{g+h x}} - \frac{16 b^2 \sqrt{f} p^2 q^2 \operatorname{ArcTanh}\Big[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\Big] \operatorname{Log}\Big[\frac{2}{1-\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\Big]}{h \sqrt{f g - e h}} - \frac{8 b^2 \sqrt{f} p^2 q^2 \operatorname{PolyLog}\Big[2, 1-\frac{2}{1-\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\Big]}{h \sqrt{f g - e h}}$$

Result (type 5, 356 leaves):

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

Problem 493: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\left(d\,(e+f\,x)^p\right)^q\right]\right)^2}{(g+h\,x)^{5/2}}\,dx$$

Optimal (type 4, 449 leaves, 15 steps):

$$\frac{16\,b^2\,f^{3/2}\,p^2\,q^2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]}{3\,h\,(f\,g-e\,h)^{3/2}}+$$
$$\frac{8\,b^2\,f^{3/2}\,p^2\,q^2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]^2}{3\,h\,(f\,g-e\,h)^{3/2}}+\frac{8\,b\,f\,p\,q\left(a+b\,\text{Log}\left[c\left(d\,(e+f\,x)^p\right)^q\right]\right)}{3\,h\,(f\,g-e\,h)\,\sqrt{g+h\,x}}-$$
$$\frac{8\,b\,f^{3/2}\,p\,q\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]\left(a+b\,\text{Log}\left[c\left(d\,(e+f\,x)^p\right)^q\right]\right)}{3\,h\,(f\,g-e\,h)^{3/2}}-\frac{2\left(a+b\,\text{Log}\left[c\left(d\,(e+f\,x)^p\right)^q\right]\right)^2}{3\,h\,(g+h\,x)^{3/2}}-$$
$$\frac{16\,b^2\,f^{3/2}\,p^2\,q^2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}\right]\text{Log}\left[\frac{2}{1-\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}}\right]}{3\,h\,(f\,g-e\,h)^{3/2}}-\frac{8\,b^2\,f^{3/2}\,p^2\,q^2\,\text{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{f}\,\sqrt{g+h\,x}}{\sqrt{f\,g-e\,h}}}\right]}{3\,h\,(f\,g-e\,h)^{3/2}}$$

Result (type 5, 1311 leaves) :

$$\frac{1}{3h}4\,a\,b\,f^{3/2}\,p\,q\left(-\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}}{\sqrt{f\,g-e\,h}}\right]}{(f\,g-e\,h)^{3/2}}+\left(\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}\,\left(2\,h\,(e+f\,x)-f\,g\,(-2+\text{Log}[e+f\,x])+e\,h\,(-2+\text{Log}[e+f\,x])\right)\right)\Big/\left((f\,g-e\,h)\,(f\,g+f\,h\,x)^2\right)\right)+\frac{1}{3h}4\,b^2\,f^{3/2}\,p\,q^2\left(-\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}}{\sqrt{f\,g-e\,h}}\right]}{(f\,g-e\,h)^{3/2}}+\left(\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}\,\left(2\,h\,(e+f\,x)-f\,g\,(-2+\text{Log}[e+f\,x])+e\,h\,(-2+\text{Log}[e+f\,x])\right)\right)\Big/\left((f\,g-e\,h)\,(f\,g+f\,h\,x)^2\right)\right)\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+$$

$$\frac{1}{3h}4\,b^2\,f^{3/2}\,p\,q\left(-\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}}{\sqrt{f\,g-e\,h}}\right]}{(f\,g-e\,h)^{3/2}}+\left(\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}\,\left(2\,h\,(e+f\,x)-f\,g\,(-2+\text{Log}[e+f\,x])+e\,h\,(-2+\text{Log}[e+f\,x])\right)\right)\Big/\left((f\,g-e\,h)\,(f\,g+f\,h\,x)^2\right)\right)\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\right.$$

$$\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+$$

$$\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\Bigg)-\frac{1}{3\,h\,(g+h\,x)^{3/2}}$$

$$2\left(a+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\right.\right.$$

$$\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+$$

$$\left.\left.\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)^2+$$

$$\frac{1}{3\,h\,(f\,g-e\,h)^2\,(f\,g+f\,h\,x)\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}}\,2\,b^2\,f\,p^2\,q^2\,\Bigg(3\,h\,(e+f\,x)\,(f\,g+f\,h\,x)$$

$$\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}\;\text{HypergeometricPFQ}\left[\left\{1,1,1,\frac{5}{2}\right\},\{2,2,2\},\frac{h\,(e+f\,x)}{-f\,g+e\,h}\right]+$$

$$(f\,g-e\,h)\,\text{Log}[e+f\,x]\,\Bigg(4\,f\,g-4\,e\,h+4\,h\,(e+f\,x)-4\,f\,g\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}+$$

$$4\,e\,h\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}-4\,h\,(e+f\,x)\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}-$$

$$f\,g\,\text{Log}[e+f\,x]+e\,h\,\text{Log}[e+f\,x]+f\,g\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}\;\text{Log}[e+f\,x]-$$

$$e\,h\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}\;\text{Log}[e+f\,x]+h\,(e+f\,x)\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}\;\text{Log}[e+f\,x]-$$

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

Problem 494: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^2}{(g+h\,x)^{7/2}}\,dx$$

Optimal (type 4, 537 leaves, 20 steps):

$$-\frac{16 b^2 f^2 p^2 q^2}{15 h (f g-e h)^2 \sqrt{g+h x}}+\frac{64 b^2 f^{5/2} p^2 q^2 \operatorname{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]}{15 h (f g-e h)^{5/2}}+\frac{8 b^2 f^{5/2} p^2 q^2 \operatorname{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]^2}{5 h (f g-e h)^{5/2}}+$$

$$\frac{8 b f p q \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{15 h (f g-e h) (g+h x)^{3/2}}+\frac{8 b f^2 p q \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{5 h (f g-e h)^2 \sqrt{g+h x}}-$$

$$\frac{8 b f^{5/2} p q \operatorname{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{5 h (f g-e h)^{5/2}}-\frac{2 \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{5 h (g+h x)^{5/2}}-$$

$$\frac{16 b^2 f^{5/2} p^2 q^2 \operatorname{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \operatorname{Log}\left[\frac{2}{1-\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{5 h (f g-e h)^{5/2}}-\frac{8 b^2 f^{5/2} p^2 q^2 \operatorname{PolyLog}\left[2, 1-\frac{2}{1-\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{5 h (f g-e h)^{5/2}}$$

Result (type 5, 1349 leaves) :

$$\frac{1}{5 h (f g-e h)^3 (f g+f h x)^2 \sqrt{\frac{f g-e h+h (e+f x)}{f}}}$$

$$2 b^2 f^2 p^2 q^2 \left(5 h (e+f x) (f g+f h x)^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right.$$

$$\text{HypergeometricPFQ}\left[\left\{1, 1, 1, \frac{7}{2}\right\}, \{2, 2, 2\}, \frac{h (e+f x)}{-f g+e h}\right]-5 h (e+f x) (f g+f h x)^2$$

$$\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\ \text{HypergeometricPFQ}\left[\left\{1, 1, \frac{7}{2}\right\}, \{2, 2\}, \frac{h (e+f x)}{-f g+e h}\right] \operatorname{Log}[e+f x]+$$

$$(f g-e h) \left(f^2 g^2 \left(-1+\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right)-\right.$$

$$2 f g h \left(-(e+f x) \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}+e \left(-1+\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right)\right)+$$

$$h^2 \left(-2 e (e+f x) \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}+(e+f x)^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}+\right.$$

$$\left.\left.\left.e^2 \left(-1+\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right)\right)\right) \operatorname{Log}[e+f x]^2\right)+$$

$$\frac{1}{15\,h}4\,a\,b\,f^{5/2}\,p\,q\left(-\frac{6\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}}{\sqrt{f\,g-e\,h}}\right]}{(f\,g-e\,h)^{5/2}}+\left(\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}\right.\right.$$

$$\left.\left.\left(2\,(f\,g-e\,h)\,(f\,g+f\,h\,x)+6\,(f\,g+f\,h\,x)^2-3\,(f\,g-e\,h)^2\,\text{Log}[e+f\,x]\right)\right/$$

$$\left.\left((f\,g-e\,h)^2\,(f\,g+f\,h\,x)^3\right)\right)+\frac{1}{15\,h}4\,b^2\,f^{5/2}\,p\,q^2$$

$$\left(-\frac{6\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}}{\sqrt{f\,g-e\,h}}\right]}{(f\,g-e\,h)^{5/2}}+\left(\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}\right.\right.$$

$$\left.\left.\left(2\,(f\,g-e\,h)\,(f\,g+f\,h\,x)+6\,(f\,g+f\,h\,x)^2-3\,(f\,g-e\,h)^2\,\text{Log}[e+f\,x]\right)\right/$$

$$\left.\left((f\,g-e\,h)^2\,(f\,g+f\,h\,x)^3\right)\right)\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+\frac{1}{15\,h}$$

$$4\,b^2\,f^{5/2}\,p\,q\left(-\frac{6\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}}{\sqrt{f\,g-e\,h}}\right]}{(f\,g-e\,h)^{5/2}}+\left(\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}\right.\right.$$

$$\left.\left(2\,(f\,g-e\,h)\,(f\,g+f\,h\,x)+6\,(f\,g+f\,h\,x)^2-3\,(f\,g-e\,h)^2\,\text{Log}[e+f\,x]\right)\right/$$

$$\left((f g - e h)^2 (f g + f h x)^3\right) \left(-q \left(-p \,\text{Log}[e + f x] + \text{Log}\left[d (e + f x)^p\right]\right) - \right.$$

$$\text{Log}\left[d (e + f x)^p\right] \left(q - \frac{q \left(-p \,\text{Log}[e + f x] + \text{Log}\left[d (e + f x)^p\right]\right)}{\text{Log}\left[d (e + f x)^p\right]}\right) +$$

$$\left.\text{Log}\left[c\, e^{q \left(-p \,\text{Log}[e+f x] + \text{Log}\left[d (e+f x)^p\right]\right)} \left(d (e + f x)^p\right)^{q - \frac{q \left(-p \,\text{Log}[e+f x] + \text{Log}\left[d (e+f x)^p\right]\right)}{\text{Log}\left[d (e+f x)^p\right]}}\right]\right) - \frac{1}{5 h (g + h x)^{5/2}}$$

$$2 \left(a + b q \left(-p \,\text{Log}[e + f x] + \text{Log}\left[d (e + f x)^p\right]\right) + b \left(-q \left(-p \,\text{Log}[e + f x] + \text{Log}\left[d (e + f x)^p\right]\right) - \right.\right.$$

$$\text{Log}\left[d (e + f x)^p\right] \left(q - \frac{q \left(-p \,\text{Log}[e + f x] + \text{Log}\left[d (e + f x)^p\right]\right)}{\text{Log}\left[d (e + f x)^p\right]}\right) +$$

$$\left.\left.\text{Log}\left[c\, e^{q \left(-p \,\text{Log}[e+f x] + \text{Log}\left[d (e+f x)^p\right]\right)} \left(d (e + f x)^p\right)^{q - \frac{q \left(-p \,\text{Log}[e+f x] + \text{Log}\left[d (e+f x)^p\right]\right)}{\text{Log}\left[d (e+f x)^p\right]}}\right]\right)\right)^2$$

Problem 495: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^2}{(g + h x)^{9/2}} \, dx$$

Optimal (type 4, 625 leaves, 26 steps):

$$-\frac{16 b^2 f^2 p^2 q^2}{105 h (f g-e h)^2 (g+h x)^{3/2}}-\frac{128 b^2 f^3 p^2 q^2}{105 h (f g-e h)^3 \sqrt{g+h x}}+\frac{368 b^2 f^{7/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]}{105 h (f g-e h)^{7/2}}+$$

$$\frac{8 b^2 f^{7/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]^2}{7 h (f g-e h)^{7/2}}+\frac{8 b f p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{35 h (f g-e h) (g+h x)^{5/2}}+$$

$$\frac{8 b f^2 p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{21 h (f g-e h)^2 (g+h x)^{3/2}}+\frac{8 b f^3 p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{7 h (f g-e h)^3 \sqrt{g+h x}}-$$

$$\frac{8 b f^{7/2} p q \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{7 h (f g-e h)^{7/2}}-\frac{2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{7 h (g+h x)^{7/2}}-$$

$$\frac{16 b^2 f^{7/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \text{Log}\left[\frac{2}{1-\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{7 h (f g-e h)^{7/2}}-\frac{8 b^2 f^{7/2} p^2 q^2 \text{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{7 h (f g-e h)^{7/2}}$$

Result (type 5, 1582 leaves) :

$$\frac{1}{7 h (f g-e h)^4 (f g+f h x)^3 \sqrt{\frac{f g-e h+h (e+f x)}{f}}}$$

$$2 b^2 f^3 p^2 q^2 \left(7 h (e+f x) (f g+f h x)^3 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right.$$

$$\text{HypergeometricPFQ}\left[\left\{1,1,1,\frac{9}{2}\right\},\{2,2,2\},\frac{h (e+f x)}{-f g+e h}\right]-7 h (e+f x) (f g+f h x)^3$$

$$\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{HypergeometricPFQ}\left[\left\{1,1,\frac{9}{2}\right\},\{2,2\},\frac{h (e+f x)}{-f g+e h}\right] \text{Log}[e+f x]+$$

$$(f g-e h) \left(f^3 g^3 \left(-1+\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right)-3 f^2 g^2 h \left(-(e+f x) \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}+\right.\right.$$

$$\left.\left. e \left(-1+\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right)\right)+3 f g h^2 \left(-2 e (e+f x) \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}+\right.$$

$$\left.\left.(e+f x)^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}+e^2 \left(-1+\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right)\right)+\right.$$

$$h^3 \left(3 e^2 (e+f x) \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} - 3 e (e+f x)^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} + (e+f x)^3 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} - e^3 \left(-1+\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right)\right)\right)\right) \mathrm{Log}[e+f x]^2\Bigg) +$$

$$\frac{1}{105 h} 4 a b f^{7/2} p q \left(-\frac{30 \mathrm{ArcTanh}\left[\frac{\sqrt{f} \sqrt{\frac{f g-e h+h (e+f x)}{f}}}{\sqrt{f g-e h}}\right]}{(f g-e h)^{7/2}} + \left(\sqrt{f} \sqrt{\frac{f g-e h+h (e+f x)}{f}} \left(6 (f g-e h)^2 (f g+f h x) + 10 (f g-e h) (f g+f h x)^2 + 30 (f g+f h x)^3 - 15 (f g-e h)^3 \mathrm{Log}[e+f x]\right)\right) \Big/ \left((f g-e h)^3 (f g+f h x)^4\right)\right) +$$

$$\frac{1}{105 h} 4 b^2 f^{7/2} p q^2 \left(-\frac{30 \mathrm{ArcTanh}\left[\frac{\sqrt{f} \sqrt{\frac{f g-e h+h (e+f x)}{f}}}{\sqrt{f g-e h}}\right]}{(f g-e h)^{7/2}} + \left(\sqrt{f} \sqrt{\frac{f g-e h+h (e+f x)}{f}} \left(6 (f g-e h)^2 (f g+f h x) + 10 (f g-e h) (f g+f h x)^2 + 30 (f g+f h x)^3 - 15 (f g-e h)^3 \mathrm{Log}[e+f x]\right)\right) \Big/ \left((f g-e h)^3 (f g+f h x)^4\right)\right)$$

$$\left(-p \mathrm{Log}[e+f x] + \mathrm{Log}\left[d (e+f x)^p\right]\right) + \frac{1}{105 h} 4 b^2 f^{7/2}$$

p
q

$$\left(-\frac{30\,\text{ArcTanh}\left[\frac{\sqrt{f}\sqrt{\frac{f g-e h+h (e+f x)}{f}}}{\sqrt{f g-e h}}\right]}{(f g-e h)^{7/2}}+\left(\sqrt{f}\sqrt{\frac{f g-e h+h\,(e+f x)}{f}}\left(6\,(f g-e h)^2\,(f g+f h x)+10\,(f g-e h)\,(f g+f h x)^2+30\,(f g+f h x)^3-15\,(f g-e h)^3\,\text{Log}[e+f x]\right)\right)\Big/\left((f g-e h)^3\,(f g+f h x)^4\right)\right)$$

$$\left(-q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)-\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+\text{Log}\left[c\,e^{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}\left(d\,(e+f x)^p\right)^{q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}}\right]\right)-\frac{1}{7\,h\,(g+h x)^{7/2}}$$

$$2\left(a+b\,q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)+b\left(-q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)-\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+\text{Log}\left[c\,e^{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}\left(d\,(e+f x)^p\right)^{q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}}\right]\right)\right)^2$$

Problem 518: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{a+b\,\text{Log}\left[c\left(d\,(e+f x)^p\right)^q\right]}{g+h x^2}\,dx$$

Optimal (type 4, 249 leaves, 9 steps):

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

Result (type 4, 261 leaves):

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

Problem 519: Attempted integration timed out after 120 seconds.

$$\int\frac{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}{\sqrt{2+h\,x^2}}\,dx$$

Optimal (type 4, 335 leaves, 11 steps):

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

Result (type 1, 1 leaves):

???

Problem 520: Attempted integration timed out after 120 seconds.

$$\int\frac{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}{\sqrt{g+h\,x^2}}\,dx$$

Optimal (type 4, 515 leaves, 12 steps):

$$\frac{b\sqrt{g}\,p\,q\sqrt{1+\frac{h x^2}{g}}\,\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]^2}{2\sqrt{h}\,\sqrt{g+h x^2}}-\frac{b\sqrt{g}\,p\,q\sqrt{1+\frac{h x^2}{g}}\,\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]\text{Log}\left[1+\frac{e^{\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]}f\sqrt{g}}{e\sqrt{h}-\sqrt{f^2 g+e^2 h}}\right]}{\sqrt{h}\,\sqrt{g+h x^2}}-$$

$$\frac{b\sqrt{g}\,p\,q\sqrt{1+\frac{h x^2}{g}}\,\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]\text{Log}\left[1+\frac{e^{\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]}f\sqrt{g}}{e\sqrt{h}+\sqrt{f^2 g+e^2 h}}\right]}{\sqrt{h}\,\sqrt{g+h x^2}}+$$

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

$$\frac{b\sqrt{g}\,p\,q\sqrt{1+\frac{h x^2}{g}}\,\text{PolyLog}\left[2,-\frac{e^{\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]}f\sqrt{g}}{e\sqrt{h}-\sqrt{f^2 g+e^2 h}}\right]}{\sqrt{h}\,\sqrt{g+h x^2}}-\frac{b\sqrt{g}\,p\,q\sqrt{1+\frac{h x^2}{g}}\,\text{PolyLog}\left[2,-\frac{e^{\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]}f\sqrt{g}}{e\sqrt{h}+\sqrt{f^2 g+e^2 h}}\right]}{\sqrt{h}\,\sqrt{g+h x^2}}$$

Result (type 1, 1 leaves):

???

Problem 521: Attempted integration timed out after 120 seconds.

$$\int\frac{a+b\,\text{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]}{\sqrt{2-h x}\,\sqrt{2+h x}}\,dx$$

Optimal (type 4, 287 leaves, 10 steps):

$$\frac{i\,b\,p\,q\,\text{ArcSin}\left[\frac{h x}{2}\right]^2}{2h}-\frac{b\,p\,q\,\text{ArcSin}\left[\frac{h x}{2}\right]\text{Log}\left[1+\frac{2 e^{i\,\text{ArcSin}\left[\frac{h x}{2}\right]}f}{i e h-\sqrt{4 f^2-e^2 h^2}}\right]}{h}-$$

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

$$\frac{i\,b\,p\,q\,\text{PolyLog}\left[2,-\frac{2 e^{i\,\text{ArcSin}\left[\frac{h x}{2}\right]}f}{i e h-\sqrt{4 f^2-e^2 h^2}}\right]}{h}+\frac{i\,b\,p\,q\,\text{PolyLog}\left[2,-\frac{2 e^{i\,\text{ArcSin}\left[\frac{h x}{2}\right]}f}{i e h+\sqrt{4 f^2-e^2 h^2}}\right]}{h}$$

Result (type 1, 1 leaves):

???

Problem 522: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 519 leaves, 12 steps):

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

Result (type 1, 1 leaves):

???

Problem 531: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(i+j\,x\right)\,\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\right)^2}{g+h\,x}\,dx$$

Optimal (type 4, 240 leaves, 11 steps):

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

Result (type 4, 866 leaves):

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

Problem 532: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]\right)^2}{g+h x}\, dx$$

Optimal (type 4, 123 leaves, 5 steps):

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

Result (type 4, 324 leaves):

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

Problem 533: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{(g+h x) (i+j x)} \, dx$$

Optimal (type 4, 288 leaves, 11 steps):

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

Result (type 4, 652 leaves):

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

Problem 535: Result more than twice size of optimal antiderivative.

$$\int \frac{(i+j x)^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^3}{g+h x} \, dx$$

Optimal (type 4, 742 leaves, 24 steps):

$$\frac{6 a b^2 j (f i-e j) p^2 q^2 x}{f h}+\frac{6 a b^2 j (h i-g j) p^2 q^2 x}{h^2}-$$
$$\frac{6 b^3 j (f i-e j) p^3 q^3 x}{f h}-\frac{6 b^3 j (h i-g j) p^3 q^3 x}{h^2}-\frac{3 b^3 j^2 p^3 q^3 (e+f x)^2}{8 f^2 h}+$$
$$\frac{6 b^3 j (f i-e j) p^2 q^2 (e+f x) \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{f^2 h}+$$
$$\frac{6 b^3 j (h i-g j) p^2 q^2 (e+f x) \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{f h^2}+$$
$$\frac{3 b^2 j^2 p^2 q^2 (e+f x)^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{4 f^2 h}-$$
$$\frac{3 b j (f i-e j) p q (e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{f^2 h}-$$
$$\frac{3 b j (h i-g j) p q (e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{f h^2}-$$
$$\frac{3 b j^2 p q (e+f x)^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{4 f^2 h}+$$
$$\frac{j (f i-e j) (e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^3}{f^2 h}+$$
$$\frac{j (h i-g j) (e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^3}{f h^2}+\frac{j^2 (e+f x)^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^3}{2 f^2 h}+$$
$$\frac{(h i-g j)^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^3 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]}{h^3}+\frac{1}{h^3}$$
$$3 b (h i-g j)^2 p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2 \text{PolyLog}\left[2,-\frac{h (e+f x)}{f g-e h}\right]-\frac{1}{h^3}$$
$$6 b^2 (h i-g j)^2 p^2 q^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \text{PolyLog}\left[3,-\frac{h (e+f x)}{f g-e h}\right]+$$
$$\frac{6 b^3 (h i-g j)^2 p^3 q^3 \text{PolyLog}\left[4,-\frac{h (e+f x)}{f g-e h}\right]}{h^3}$$

Result (type 4, 4146 leaves):

$$\frac{1}{8 f^2 h^3}\Big(-48 a^2 b e f h^2 i j p q+24 a^2 b e f g h j^2 p q+96 a b^2 e f h^2 i j p^2 q^2-48 a b^2 e f g h j^2 p^2 q^2-$$
$$96 b^3 e f h^2 i j p^3 q^3+48 b^3 e f g h j^2 p^3 q^3+16 a^3 f^2 h^2 i j x-8 a^3 f^2 g h j^2 x-$$
$$48 a^2 b f^2 h^2 i j p q x+24 a^2 b f^2 g h j^2 p q x+12 a^2 b e f h^2 j^2 p q x+96 a b^2 f^2 h^2 i j p^2 q^2 x-$$
$$48 a b^2 f^2 g h j^2 p^2 q^2 x-36 a b^2 e f h^2 j^2 p^2 q^2 x-96 b^3 f^2 h^2 i j p^3 q^3 x+48 b^3 f^2 g h j^2 p^3 q^3 x+$$
$$42 b^3 e f h^2 j^2 p^3 q^3 x+4 a^3 f^2 h^2 j^2 x^2-6 a^2 b f^2 h^2 j^2 p q x^2+6 a b^2 f^2 h^2 j^2 p^2 q^2 x^2-$$
$$3 b^3 f^2 h^2 j^2 p^3 q^3 x^2+48 a^2 b e f h^2 i j p q \text{Log}[e+f x]-24 a^2 b e f g h j^2 p q \text{Log}[e+f x]-$$
$$12 a^2 b e^2 h^2 j^2 p q \text{Log}[e+f x]+36 a b^2 e^2 h^2 j^2 p^2 q^2 \text{Log}[e+f x]-42 b^3 e^2 h^2 j^2 p^3 q^3 \text{Log}[e+f x]-$$
$$48 a b^2 e f h^2 i j p^2 q^2 \text{Log}[e+f x]^2+24 a b^2 e f g h j^2 p^2 q^2 \text{Log}[e+f x]^2+$$
$$12 a b^2 e^2 h^2 j^2 p^2 q^2 \text{Log}[e+f x]^2-18 b^3 e^2 h^2 j^2 p^3 q^3 \text{Log}[e+f x]^2+$$
$$16 b^3 e f h^2 i j p^3 q^3 \text{Log}[e+f x]^3-8 b^3 e f g h j^2 p^3 q^3 \text{Log}[e+f x]^3-$$
$$4 b^3 e^2 h^2 j^2 p^3 q^3 \text{Log}[e+f x]^3-96 a b^2 e f h^2 i j p q \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]+$$

$$48\,a\,b^2\,e\,f\,g\,h\,j^2\,p\,q\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]+96\,b^3\,e\,f\,h^2\,i\,j\,p^2\,q^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]-$$
$$48\,b^3\,e\,f\,g\,h\,j^2\,p^2\,q^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]+48\,a^2\,b\,f^2\,h^2\,i\,j\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]-$$
$$24\,a^2\,b\,f^2\,g\,h\,j^2\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]-96\,a\,b^2\,f^2\,h^2\,i\,j\,p\,q\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]+$$
$$48\,a\,b^2\,f^2\,g\,h\,j^2\,p\,q\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]+24\,a\,b^2\,e\,f\,h^2\,j^2\,p\,q\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]+$$
$$96\,b^3\,f^2\,h^2\,i\,j\,p^2\,q^2\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]-48\,b^3\,f^2\,g\,h\,j^2\,p^2\,q^2\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]-$$
$$36\,b^3\,e\,f\,h^2\,j^2\,p^2\,q^2\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]+12\,a^2\,b\,f^2\,h^2\,j^2\,x^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]-$$
$$12\,a\,b^2\,f^2\,h^2\,j^2\,p\,q\,x^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]+6\,b^3\,f^2\,h^2\,j^2\,p^2\,q^2\,x^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]+$$
$$96\,a\,b^2\,e\,f\,h^2\,i\,j\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]-$$
$$48\,a\,b^2\,e\,f\,g\,h\,j^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]-$$
$$24\,a\,b^2\,e^2\,h^2\,j^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]+$$
$$36\,b^3\,e^2\,h^2\,j^2\,p^2\,q^2\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]-$$
$$48\,b^3\,e\,f\,h^2\,i\,j\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]+$$
$$24\,b^3\,e\,f\,g\,h\,j^2\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]+$$
$$12\,b^3\,e^2\,h^2\,j^2\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]-$$
$$48\,b^3\,e\,f\,h^2\,i\,j\,p\,q\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2+24\,b^3\,e\,f\,g\,h\,j^2\,p\,q\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2+$$
$$48\,a\,b^2\,f^2\,h^2\,i\,j\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2-24\,a\,b^2\,f^2\,g\,h\,j^2\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2-$$
$$48\,b^3\,f^2\,h^2\,i\,j\,p\,q\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2+24\,b^3\,f^2\,g\,h\,j^2\,p\,q\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2+$$
$$12\,b^3\,e\,f\,h^2\,j^2\,p\,q\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2+12\,a\,b^2\,f^2\,h^2\,j^2\,x^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2-$$
$$6\,b^3\,f^2\,h^2\,j^2\,p\,q\,x^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2+48\,b^3\,e\,f\,h^2\,i\,j\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2-$$
$$24\,b^3\,e\,f\,g\,h\,j^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2-$$
$$12\,b^3\,e^2\,h^2\,j^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2+16\,b^3\,f^2\,h^2\,i\,j\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^3-$$
$$8\,b^3\,f^2\,g\,h\,j^2\,x\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^3+4\,b^3\,f^2\,h^2\,j^2\,x^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^3+$$
$$8\,a^3\,f^2\,h^2\,i^2\,\text{Log}[g+h\,x]-16\,a^3\,f^2\,g\,h\,i\,j\,\text{Log}[g+h\,x]+8\,a^3\,f^2\,g^2\,j^2\,\text{Log}[g+h\,x]-$$
$$24\,a^2\,b\,f^2\,h^2\,i^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}[g+h\,x]+48\,a^2\,b\,f^2\,g\,h\,i\,j\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}[g+h\,x]-$$
$$24\,a^2\,b\,f^2\,g^2\,j^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}[g+h\,x]+24\,a\,b^2\,f^2\,h^2\,i^2\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}[g+h\,x]-$$
$$48\,a\,b^2\,f^2\,g\,h\,i\,j\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}[g+h\,x]+24\,a\,b^2\,f^2\,g^2\,j^2\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}[g+h\,x]-$$
$$8\,b^3\,f^2\,h^2\,i^2\,p^3\,q^3\,\text{Log}[e+f\,x]^3\,\text{Log}[g+h\,x]+16\,b^3\,f^2\,g\,h\,i\,j\,p^3\,q^3\,\text{Log}[e+f\,x]^3\,\text{Log}[g+h\,x]-$$
$$8\,b^3\,f^2\,g^2\,j^2\,p^3\,q^3\,\text{Log}[e+f\,x]^3\,\text{Log}[g+h\,x]+24\,a^2\,b\,f^2\,h^2\,i^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\,\text{Log}[g+h\,x]-$$
$$48\,a^2\,b\,f^2\,g\,h\,i\,j\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\,\text{Log}[g+h\,x]+$$
$$24\,a^2\,b\,f^2\,g^2\,j^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\,\text{Log}[g+h\,x]-$$
$$48\,a\,b^2\,f^2\,h^2\,i^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\,\text{Log}[g+h\,x]+$$
$$96\,a\,b^2\,f^2\,g\,h\,i\,j\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\,\text{Log}[g+h\,x]-$$
$$48\,a\,b^2\,f^2\,g^2\,j^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\,\text{Log}[g+h\,x]+$$
$$24\,b^3\,f^2\,h^2\,i^2\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\,\text{Log}[g+h\,x]-$$
$$48\,b^3\,f^2\,g\,h\,i\,j\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\,\text{Log}[g+h\,x]+$$
$$24\,b^3\,f^2\,g^2\,j^2\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\,\text{Log}[g+h\,x]+$$
$$24\,a\,b^2\,f^2\,h^2\,i^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2\,\text{Log}[g+h\,x]-48\,a\,b^2\,f^2\,g\,h\,i\,j$$
$$\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2\,\text{Log}[g+h\,x]+24\,a\,b^2\,f^2\,g^2\,j^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2\,\text{Log}[g+h\,x]-$$
$$24\,b^3\,f^2\,h^2\,i^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2\,\text{Log}[g+h\,x]+$$
$$48\,b^3\,f^2\,g\,h\,i\,j\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2\,\text{Log}[g+h\,x]-$$
$$24\,b^3\,f^2\,g^2\,j^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2\,\text{Log}[g+h\,x]+$$
$$8\,b^3\,f^2\,h^2\,i^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^3\,\text{Log}[g+h\,x]-$$
$$16\,b^3\,f^2\,g\,h\,i\,j\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^3\,\text{Log}[g+h\,x]+$$
$$8\,b^3\,f^2\,g^2\,j^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^3\,\text{Log}[g+h\,x]+24\,a^2\,b\,f^2\,h^2\,i^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[\frac{f\,\left(g+h\,x\right)}{f\,g-e\,h}\right]-$$

$48 a^2 b f^2 g h i j p q \text{Log}[e+f x] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$
$24 a^2 b f^2 g^2 j^2 p q \text{Log}[e+f x] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-$
$24 a b^2 f^2 h^2 i^2 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+48 a b^2 f^2 g h i j p^2 q^2$
$\text{Log}[e+f x]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-24 a b^2 f^2 g^2 j^2 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$
$8 b^3 f^2 h^2 i^2 p^3 q^3 \text{Log}[e+f x]^3 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-16 b^3 f^2 g h i j p^3 q^3 \text{Log}[e+f x]^3$
$\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+8 b^3 f^2 g^2 j^2 p^3 q^3 \text{Log}[e+f x]^3 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$
$48 a b^2 f^2 h^2 i^2 p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-$
$96 a b^2 f^2 g h i j p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$
$48 a b^2 f^2 g^2 j^2 p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-$
$24 b^3 f^2 h^2 i^2 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$
$48 b^3 f^2 g h i j p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-$
$24 b^3 f^2 g^2 j^2 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$
$24 b^3 f^2 h^2 i^2 p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-$
$48 b^3 f^2 g h i j p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$
$24 b^3 f^2 g^2 j^2 p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$
$24 b f^2 (h i-g j)^2 p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2 \text{PolyLog}\left[2,\frac{h (e+f x)}{-f g+e h}\right]-$
$48 b^2 f^2 (h i-g j)^2 p^2 q^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \text{PolyLog}\left[3,\frac{h (e+f x)}{-f g+e h}\right]+$
$48 b^3 f^2 h^2 i^2 p^3 q^3 \text{PolyLog}\left[4,\frac{h (e+f x)}{-f g+e h}\right]-$
$96 b^3 f^2 g h i j p^3 q^3 \text{PolyLog}\left[4,\frac{h (e+f x)}{-f g+e h}\right]+48 b^3 f^2 g^2 j^2 p^3 q^3 \text{PolyLog}\left[4,\frac{h (e+f x)}{-f g+e h}\right]\Bigg)$

Problem 536: Result more than twice size of optimal antiderivative.

$$\int \frac{(i+j x)\left(a+b \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^3}{g+h x} \, dx$$

Optimal (type 4, 349 leaves, 13 steps):

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

Result (type 4, 1806 leaves):

$$\frac{1}{f h^2}\Big(-3 a^2 b e h j p q+6 a b^2 e h j p^2 q^2-6 b^3 e h j p^3 q^3+$$
$$a^3 f h j x-3 a^2 b f h j p q x+6 a b^2 f h j p^2 q^2 x-6 b^3 f h j p^3 q^3 x+$$
$$3 a^2 b e h j p q \text{Log}[e+f x]-3 a b^2 e h j p^2 q^2 \text{Log}[e+f x]^2+b^3 e h j p^3 q^3 \text{Log}[e+f x]^3-$$
$$6 a b^2 e h j p q \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]+6 b^3 e h j p^2 q^2 \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]+$$
$$3 a^2 b f h j x \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]-6 a b^2 f h j p q x \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]+$$
$$6 b^3 f h j p^2 q^2 x \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]+6 a b^2 e h j p q \text{Log}[e+f x] \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]-$$
$$3 b^3 e h j p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]-$$
$$3 b^3 e h j p q \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2+3 a b^2 f h j x \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2-$$
$$3 b^3 f h j p q x \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2+3 b^3 e h j p q \text{Log}[e+f x] \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2+$$
$$b^3 f h j x \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^3+a^3 f h i \text{Log}[g+h x]-a^3 f g j \text{Log}[g+h x]-$$
$$3 a^2 b f h i p q \text{Log}[e+f x] \text{Log}[g+h x]+3 a^2 b f g j p q \text{Log}[e+f x] \text{Log}[g+h x]+$$
$$3 a b^2 f h i p^2 q^2 \text{Log}[e+f x]^2 \text{Log}[g+h x]-3 a b^2 f g j p^2 q^2 \text{Log}[e+f x]^2 \text{Log}[g+h x]-$$
$$b^3 f h i p^3 q^3 \text{Log}[e+f x]^3 \text{Log}[g+h x]+b^3 f g j p^3 q^3 \text{Log}[e+f x]^3 \text{Log}[g+h x]+$$
$$3 a^2 b f h i \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}[g+h x]-3 a^2 b f g j \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}[g+h x]-$$
$$6 a b^2 f h i p q \text{Log}[e+f x] \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}[g+h x]+$$
$$6 a b^2 f g j p q \text{Log}[e+f x] \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}[g+h x]+$$
$$3 b^3 f h i p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}[g+h x]-$$
$$3 b^3 f g j p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}[g+h x]+$$
$$3 a b^2 f h i \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]-3 a b^2 f g j \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]-$$
$$3 b^3 f h i p q \text{Log}[e+f x] \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]+$$
$$3 b^3 f g j p q \text{Log}[e+f x] \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]+$$
$$b^3 f h i \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^3 \text{Log}[g+h x]-b^3 f g j \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^3 \text{Log}[g+h x]+$$
$$3 a^2 b f h i p q \text{Log}[e+f x] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-3 a^2 b f g j p q \text{Log}[e+f x] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-$$

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

Problem 537: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^3}{g+h x} \, dx$$

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

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

Result (type 4, 646 leaves):

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

Problem 538: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^3}{(g+h x)(i+j x)} \, dx$$

Optimal (type 4, 410 leaves, 13 steps):

$$\frac{\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q}\right]\right)^{3}\,\text{Log}\left[\frac{f\,(g+h\,x)}{f\,g-e\,h}\right]}{h\,i-g\,j}-\frac{\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^{p}\right)^{q}\right]\right)^{3}\,\text{Log}\left[\frac{f\,(i+j\,x)}{f\,i-e\,j}\right]}{h\,i-g\,j}+$$

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

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

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

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

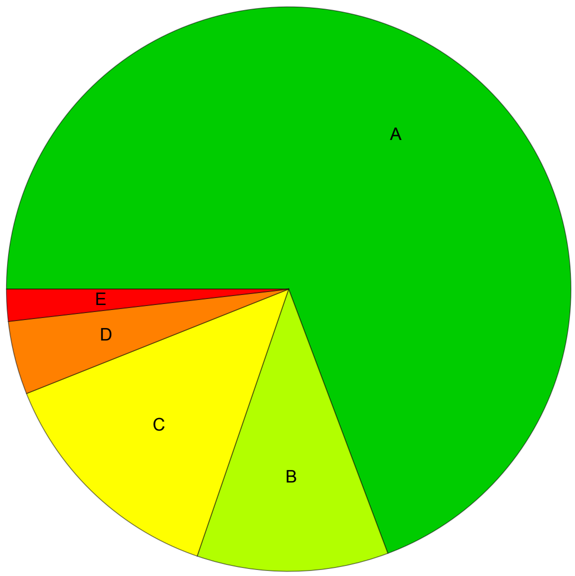
$$\frac{6\,b^{3}\,p^{3}\,q^{3}\,\text{PolyLog}\left[4,-\frac{h\,(e+f\,x)}{f\,g-e\,h}\right]}{h\,i-g\,j}-\frac{6\,b^{3}\,p^{3}\,q^{3}\,\text{PolyLog}\left[4,-\frac{j\,(e+f\,x)}{f\,i-e\,j}\right]}{h\,i-g\,j}$$

Result (type 4, 1350 leaves) :

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

Summary of Integration Test Results

547 integration problems



A - 379 optimal antiderivatives

B - 60 more than twice size of optimal antiderivatives

C - 75 unnecessarily complex antiderivatives

D - 23 unable to integrate problems

E - 10 integration timeouts