Maple 2018.2 Integration Test Results
on the problems in "5 Inverse trig functions/5.1 Inverse sine"

Test results for the 59 problems in "5.1.2 (d x)^m (a+b arcsin(c x))^n.txt"

Problem 36: Unable to integrate problem.

$$\int (b x)^m \arcsin(a x) \, dx$$

Optimal(type 5, 65 leaves, 2 steps):

$$\frac{(b x)^{1+m} \arcsin(a x)}{b (1+m)} - \frac{a (b x)^{2+m} \operatorname{hypergeom}\left(\left[\frac{1}{2}, 1+\frac{m}{2}\right], \left[2+\frac{m}{2}\right], a^2 x^2\right)}{b^2 (1+m) (2+m)}$$

Result(type 8, 12 leaves):

$$\int (b x)^m \arcsin(a x) \, dx$$

Problem 39: Unable to integrate problem.

$$\int x^2 \arcsin(a x)^n \, dx$$

Optimal(type 4, 151 leaves, 9 steps):

$$-\frac{I \arcsin(a x)^n \Gamma(1+n, -I \arcsin(a x))}{8 a^3 (-I \arcsin(a x))^n} + \frac{I \arcsin(a x)^n \Gamma(1+n, I \arcsin(a x))}{8 a^3 (I \arcsin(a x))^n} + \frac{I 3^{-1-n} \arcsin(a x)^n \Gamma(1+n, -3 I \arcsin(a x))}{8 a^3 (-I \arcsin(a x))^n} - \frac{I 3^{-1-n} \arcsin(a x)^n \Gamma(1+n, 3 I \arcsin(a x))}{8 a^3 (I \arcsin(a x))^n}$$

Result(type 8, 12 leaves):

$$\int x^2 \arcsin(a x)^n \, dx$$

Problem 40: Unable to integrate problem.

$$\int \arcsin(a x)^n \, dx$$

Optimal(type 4, 69 leaves, 4 steps):

$$-\frac{I \arcsin(a x)^n \Gamma(1+n, -I \arcsin(a x))}{2 a (-I \arcsin(a x))^n} + \frac{I \arcsin(a x)^n \Gamma(1+n, I \arcsin(a x))}{2 a (I \arcsin(a x))^n}$$

Result(type 9, 239 leaves):

$$\frac{1}{a} \left(2^n \sqrt{\pi} \left(\frac{2^{-1-n} \arcsin(a x)^n (6+2 n) a x}{\sqrt{\pi} (1+n) (3+n)} + \frac{\arcsin(a x)^n 2^{-n} \sqrt{-a^2 x^2+1} \left(\arcsin(a x) x^2 a^2 - \arcsin(a x) + a x \sqrt{-a^2 x^2+1}\right)}{\sqrt{\pi} (1+n) (a^2 x^2 - 1)} \right.\right.$$

$$+\frac{2^{-n}\sqrt{\arcsin(a x)}\; n\,\mathrm{LommelS1}\left(n+\frac{1}{2},\frac{3}{2},\arcsin(a x)\right) a x}{\sqrt{\pi}\;(1+n)}$$

$$\left.\left.-\frac{2^{-n}\sqrt{-a^2 x^2+1}\;\left(\arcsin(a x)\, x^2 a^2-\arcsin(a x)\;+a x\sqrt{-a^2 x^2+1}\right)\mathrm{LommelS1}\left(n+\frac{3}{2},\frac{1}{2},\arcsin(a x)\right)}{\sqrt{\pi}\;(1+n)\;\sqrt{\arcsin(a x)}\;\left(a^2 x^2-1\right)}\right)\right)$$

Problem 46: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 152 leaves, 7 steps):

$$-\frac{I\,(a+b\arcsin(c x))^4}{4 b}+(a+b\arcsin(c x))^3\ln\left(1-\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)-\frac{3 I b\,(a+b\arcsin(c x))^2\,\mathrm{polylog}\left(2,\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{2}$$
$$+\frac{3 b^2\,(a+b\arcsin(c x))\,\mathrm{polylog}\left(3,\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{2}+\frac{3 I b^3\,\mathrm{polylog}\left(4,\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{4}$$

Result(type 4, 591 leaves):

$$a^3\ln(c x)-\frac{3 I a^2 b\arcsin(c x)^2}{2}+b^3\arcsin(c x)^3\ln\left(1-I c x-\sqrt{-c^2 x^2+1}\right)-3 I b^3\arcsin(c x)^2\,\mathrm{polylog}\left(2,-I c x-\sqrt{-c^2 x^2+1}\right)$$
$$+6 b^3\arcsin(c x)\;\mathrm{polylog}\left(3,I c x+\sqrt{-c^2 x^2+1}\right)-3 I b^3\arcsin(c x)^2\,\mathrm{polylog}\left(2,I c x+\sqrt{-c^2 x^2+1}\right)+b^3\arcsin(c x)^3\ln\left(1+I c x+\sqrt{-c^2 x^2+1}\right)$$
$$-3 I a^2 b\,\mathrm{polylog}\left(2,-I c x-\sqrt{-c^2 x^2+1}\right)+6 b^3\arcsin(c x)\;\mathrm{polylog}\left(3,-I c x-\sqrt{-c^2 x^2+1}\right)-I a b^2\arcsin(c x)^3-3 I a^2 b\,\mathrm{polylog}\left(2,I c x\right.$$
$$\left.+\sqrt{-c^2 x^2+1}\right)+6 I b^3\,\mathrm{polylog}\left(4,-I c x-\sqrt{-c^2 x^2+1}\right)+6 I b^3\,\mathrm{polylog}\left(4,I c x+\sqrt{-c^2 x^2+1}\right)+3 a b^2\arcsin(c x)^2\ln\left(1-I c x-\sqrt{-c^2 x^2+1}\right)$$
$$+3 a b^2\arcsin(c x)^2\ln\left(1+I c x+\sqrt{-c^2 x^2+1}\right)+6 a b^2\,\mathrm{polylog}\left(3,I c x+\sqrt{-c^2 x^2+1}\right)+6 a b^2\,\mathrm{polylog}\left(3,-I c x-\sqrt{-c^2 x^2+1}\right)$$
$$-6 I a b^2\arcsin(c x)\;\mathrm{polylog}\left(2,-I c x-\sqrt{-c^2 x^2+1}\right)+3 a^2 b\arcsin(c x)\;\ln\left(1+I c x+\sqrt{-c^2 x^2+1}\right)+3 a^2 b\arcsin(c x)\;\ln\left(1-I c x-\sqrt{-c^2 x^2+1}\right)$$
$$-\frac{I b^3\arcsin(c x)^4}{4}-6 I a b^2\arcsin(c x)\;\mathrm{polylog}\left(2,I c x+\sqrt{-c^2 x^2+1}\right)$$

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

$$\int\frac{1}{(a+b\arcsin(c x))^{5/2}}\,dx$$

Optimal(type 4, 129 leaves, 8 steps):

$$-\frac{4\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\;\sqrt{a+b\arcsin(c x)}}{\sqrt{\pi}\;\sqrt{b}}\right)\sqrt{2}\;\sqrt{\pi}}{3 b^{5/2} c}-\frac{4\,\mathrm{FresnelS}\left(\frac{\sqrt{2}\;\sqrt{a+b\arcsin(c x)}}{\sqrt{\pi}\;\sqrt{b}}\right)\sin\left(\frac{a}{b}\right)\sqrt{2}\;\sqrt{\pi}}{3 b^{5/2} c}-\frac{2\sqrt{-c^2 x^2+1}}{3 b c\,(a+b\arcsin(c x))^{3/2}}$$

$$+\frac{4x}{3b^2\sqrt{a+b\arcsin(cx)}}$$

Result(type 4, 324 leaves):

$$\frac{1}{3cb^2(a+b\arcsin(cx))^{3/2}}\Bigg(2\Bigg(-2\arcsin(cx)\sqrt{\pi}\sqrt{a+b\arcsin(cx)}\sqrt{2}\sqrt{\frac{1}{b}}\,\mathrm{FresnelC}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\sqrt{\frac{1}{b}}\,b}\right)\cos\left(\frac{a}{b}\right)b$$

$$-2\arcsin(cx)\sqrt{\pi}\sqrt{a+b\arcsin(cx)}\sqrt{2}\sqrt{\frac{1}{b}}\,\mathrm{FresnelS}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\sqrt{\frac{1}{b}}\,b}\right)\sin\left(\frac{a}{b}\right)b$$

$$-2\sqrt{\pi}\sqrt{a+b\arcsin(cx)}\sqrt{2}\sqrt{\frac{1}{b}}\,\mathrm{FresnelC}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\sqrt{\frac{1}{b}}\,b}\right)\cos\left(\frac{a}{b}\right)a$$

$$-2\sqrt{\pi}\sqrt{a+b\arcsin(cx)}\sqrt{2}\sqrt{\frac{1}{b}}\,\mathrm{FresnelS}\left(\frac{\sqrt{2}\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\sqrt{\frac{1}{b}}\,b}\right)\sin\left(\frac{a}{b}\right)a+2\arcsin(cx)\sin\left(\frac{a+b\arcsin(cx)}{b}-\frac{a}{b}\right)b$$

$$-\cos\left(\frac{a+b\arcsin(cx)}{b}-\frac{a}{b}\right)b+2\sin\left(\frac{a+b\arcsin(cx)}{b}-\frac{a}{b}\right)a\Bigg)\Bigg)$$

Test results for the 193 problems in "5.1.4 (f x)^m (d+e x^2)^p (a+b arcsin(c x))^n.txt"

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

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

Optimal(type 4, 145 leaves, 9 steps):

$$\frac{-a-b\arcsin(cx)}{2dx^2}-\frac{2c^2(a+b\arcsin(cx))\operatorname{arctanh}\left(\left(Icx+\sqrt{-c^2x^2+1}\right)^2\right)}{d}+\frac{Ibc^2\operatorname{polylog}\left(2,-\left(Icx+\sqrt{-c^2x^2+1}\right)^2\right)}{2d}$$

$$-\frac{Ibc^2\operatorname{polylog}\left(2,\left(Icx+\sqrt{-c^2x^2+1}\right)^2\right)}{2d}-\frac{bc\sqrt{-c^2x^2+1}}{2dx}$$

Result(type 4, 295 leaves):

$$-\frac{c^2a\ln(cx+1)}{2d}-\frac{a}{2dx^2}+\frac{c^2a\ln(cx)}{d}-\frac{c^2a\ln(cx-1)}{2d}+\frac{Ic^2b}{2d}-\frac{bc\sqrt{-c^2x^2+1}}{2dx}-\frac{b\arcsin(cx)}{2dx^2}+\frac{c^2b\arcsin(cx)\ln\left(1-Icx-\sqrt{-c^2x^2+1}\right)}{d}$$

$$-\frac{Ic^2b\operatorname{polylog}\left(2,Icx+\sqrt{-c^2x^2+1}\right)}{d}+\frac{c^2b\arcsin(cx)\ln\left(1+Icx+\sqrt{-c^2x^2+1}\right)}{d}-\frac{Ic^2b\operatorname{polylog}\left(2,-Icx-\sqrt{-c^2x^2+1}\right)}{d}$$

$$-\frac{c^2 b \arcsin(cx) \ln\left(1+\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{d}+\frac{I b c^2 \operatorname{polylog}\left(2,-\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{2 d}$$

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

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

Optimal(type 3, 88 leaves, 4 steps):

$$-\frac{b x^3}{12 c d^3 (-c^2 x^2+1)^{3/2}}-\frac{b \arcsin(cx)}{4 c^4 d^3}+\frac{x^4 (a+b \arcsin(cx))}{4 d^3 (-c^2 x^2+1)^2}+\frac{b x}{4 c^3 d^3 \sqrt{-c^2 x^2+1}}$$

Result(type 3, 211 leaves):

$$\frac{1}{c^4}\left(-\frac{a\left(-\frac{1}{16 (cx+1)^2}+\frac{3}{16 (cx+1)}-\frac{1}{16 (cx-1)^2}-\frac{3}{16 (cx-1)}\right)}{d^3}-\frac{1}{d^3}\left(b\left(-\frac{\arcsin(cx)}{16 (cx+1)^2}+\frac{3 \arcsin(cx)}{16 (cx+1)}-\frac{\arcsin(cx)}{16 (cx-1)^2}-\frac{3 \arcsin(cx)}{16 (cx-1)}\right.\right.\right.$$
$$\left.\left.\left.+\frac{\sqrt{-(cx-1)^2-2cx+2}}{48 (cx-1)^2}+\frac{\sqrt{-(cx-1)^2-2cx+2}}{6 (cx-1)}-\frac{\sqrt{-(cx+1)^2+2cx+2}}{48 (cx+1)^2}+\frac{\sqrt{-(cx+1)^2+2cx+2}}{6 (cx+1)}\right)\right)\right)$$

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

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

Optimal(type 3, 73 leaves, 3 steps):

$$-\frac{b x}{12 c d^3 (-c^2 x^2+1)^{3/2}}+\frac{a+b \arcsin(cx)}{4 c^2 d^3 (-c^2 x^2+1)^2}-\frac{b x}{6 c d^3 \sqrt{-c^2 x^2+1}}$$

Result(type 3, 150 leaves):

$$\frac{1}{c^2}\left(\frac{a}{4 d^3 (c^2 x^2-1)^2}\right.$$
$$\left.-\frac{b\left(-\frac{\arcsin(cx)}{4 (c^2 x^2-1)^2}+\frac{\sqrt{-(cx-1)^2-2cx+2}}{48 (cx-1)^2}-\frac{\sqrt{-(cx-1)^2-2cx+2}}{12 (cx-1)}-\frac{\sqrt{-(cx+1)^2+2cx+2}}{48 (cx+1)^2}-\frac{\sqrt{-(cx+1)^2+2cx+2}}{12 (cx+1)}\right)}{d^3}\right)$$

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

$$\int x^2 \sqrt{-c^2 d x^2 + d}\, (a + b \arcsin(c x))\, dx$$

Optimal(type 3, 163 leaves, 5 steps):

$$-\frac{x (a + b \arcsin(c x)) \sqrt{-c^2 d x^2 + d}}{8 c^2} + \frac{x^3 (a + b \arcsin(c x)) \sqrt{-c^2 d x^2 + d}}{4} + \frac{b x^2 \sqrt{-c^2 d x^2 + d}}{16 c \sqrt{-c^2 x^2 + 1}} - \frac{b c x^4 \sqrt{-c^2 d x^2 + d}}{16 \sqrt{-c^2 x^2 + 1}} + \frac{(a + b \arcsin(c x))^2 \sqrt{-c^2 d x^2 + d}}{16 b c^3 \sqrt{-c^2 x^2 + 1}}$$

Result(type 3, 372 leaves):

$$-\frac{a x (-c^2 d x^2 + d)^{3/2}}{4 c^2 d} + \frac{a x \sqrt{-c^2 d x^2 + d}}{8 c^2} + \frac{a d \arctan\left(\frac{\sqrt{c^2 d}\, x}{\sqrt{-c^2 d x^2 + d}}\right)}{8 c^2 \sqrt{c^2 d}} - \frac{b \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1} \arcsin(c x)^2}{16 c^3 (c^2 x^2 - 1)} + \frac{b \sqrt{-d (c^2 x^2 - 1)}\, c^2 \arcsin(c x) x^5}{4 (c^2 x^2 - 1)} - \frac{3 b \sqrt{-d (c^2 x^2 - 1)} \arcsin(c x) x^3}{8 (c^2 x^2 - 1)} + \frac{b \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1}}{128 c^3 (c^2 x^2 - 1)} + \frac{b \sqrt{-d (c^2 x^2 - 1)} \arcsin(c x) x}{8 c^2 (c^2 x^2 - 1)} + \frac{b \sqrt{-d (c^2 x^2 - 1)}\, c \sqrt{-c^2 x^2 + 1}\, x^4}{16 (c^2 x^2 - 1)} - \frac{b \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1}\, x^2}{16 c (c^2 x^2 - 1)}$$

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

$$\int \frac{\sqrt{-c^2 d x^2 + d}\, (a + b \arcsin(c x))}{x^4}\, dx$$

Optimal(type 3, 95 leaves, 3 steps):

$$-\frac{(-c^2 d x^2 + d)^{3/2} (a + b \arcsin(c x))}{3 d x^3} - \frac{b c \sqrt{-c^2 d x^2 + d}}{6 x^2 \sqrt{-c^2 x^2 + 1}} - \frac{b c^3 \ln(x) \sqrt{-c^2 d x^2 + d}}{3 \sqrt{-c^2 x^2 + 1}}$$

Result(type 3, 1116 leaves):

$$-\frac{a (-c^2 d x^2 + d)^{3/2}}{3 d x^3} - \frac{2 I b \sqrt{-c^2 x^2 + 1} \sqrt{-d (c^2 x^2 - 1)} \arcsin(c x) c^3}{3 c^2 x^2 - 3} + \frac{I b \sqrt{-d (c^2 x^2 - 1)}\, x^3 c^6}{3 (3 c^4 x^4 - 3 c^2 x^2 + 1) (c^2 x^2 - 1)} - \frac{I b \sqrt{-d (c^2 x^2 - 1)}\, x^3 (-c^2 x^2 + 1) c^6}{6 (3 c^4 x^4 - 3 c^2 x^2 + 1) (c^2 x^2 - 1)} + \frac{b \sqrt{-d (c^2 x^2 - 1)}\, x^5 \arcsin(c x) c^8}{(3 c^4 x^4 - 3 c^2 x^2 + 1) (c^2 x^2 - 1)} - \frac{I b \sqrt{-d (c^2 x^2 - 1)}\, x c^4}{6 (3 c^4 x^4 - 3 c^2 x^2 + 1) (c^2 x^2 - 1)} - \frac{I b \sqrt{-d (c^2 x^2 - 1)}\, x^5 c^8}{6 (3 c^4 x^4 - 3 c^2 x^2 + 1) (c^2 x^2 - 1)} - \frac{I b \sqrt{-d (c^2 x^2 - 1)}\, x^2 \arcsin(c x) \sqrt{-c^2 x^2 + 1}\, c^5}{(3 c^4 x^4 - 3 c^2 x^2 + 1) (c^2 x^2 - 1)} - \frac{3 b \sqrt{-d (c^2 x^2 - 1)}\, x^3 \arcsin(c x) c^6}{(3 c^4 x^4 - 3 c^2 x^2 + 1) (c^2 x^2 - 1)} + \frac{I b \sqrt{-d (c^2 x^2 - 1)}\, x (-c^2 x^2 + 1) c^4}{6 (3 c^4 x^4 - 3 c^2 x^2 + 1) (c^2 x^2 - 1)} + \frac{b \sqrt{-d (c^2 x^2 - 1)}\, x^2 \sqrt{-c^2 x^2 + 1}\, c^5}{2 (3 c^4 x^4 - 3 c^2 x^2 + 1) (c^2 x^2 - 1)} + \frac{I b \sqrt{-d (c^2 x^2 - 1)}\, x^4 \arcsin(c x) \sqrt{-c^2 x^2 + 1}\, c^7}{(3 c^4 x^4 - 3 c^2 x^2 + 1) (c^2 x^2 - 1)} + \frac{I b \sqrt{-d (c^2 x^2 - 1)} \arcsin(c x) \sqrt{-c^2 x^2 + 1}\, c^3}{3 (3 c^4 x^4 - 3 c^2 x^2 + 1) (c^2 x^2 - 1)}$$

$$+\frac{10 b \sqrt{-d\left(c^{2} x^{2}-1\right)}\, x \arcsin(c x)\, c^{4}}{3\left(3 c^{4} x^{4}-3 c^{2} x^{2}+1\right)\left(c^{2} x^{2}-1\right)}-\frac{b \sqrt{-d\left(c^{2} x^{2}-1\right)}\, \sqrt{-c^{2} x^{2}+1}\, c^{3}}{2\left(3 c^{4} x^{4}-3 c^{2} x^{2}+1\right)\left(c^{2} x^{2}-1\right)}-\frac{5 b \sqrt{-d\left(c^{2} x^{2}-1\right)} \arcsin(c x)\, c^{2}}{3\left(3 c^{4} x^{4}-3 c^{2} x^{2}+1\right) x\left(c^{2} x^{2}-1\right)}$$

$$+\frac{b \sqrt{-d\left(c^{2} x^{2}-1\right)}\, \sqrt{-c^{2} x^{2}+1}\, c}{6\left(3 c^{4} x^{4}-3 c^{2} x^{2}+1\right) x^{2}\left(c^{2} x^{2}-1\right)}+\frac{b \sqrt{-d\left(c^{2} x^{2}-1\right)} \arcsin(c x)}{3\left(3 c^{4} x^{4}-3 c^{2} x^{2}+1\right) x^{3}\left(c^{2} x^{2}-1\right)}+\frac{b \sqrt{-d\left(c^{2} x^{2}-1\right)}\, \sqrt{-c^{2} x^{2}+1}\, \ln\left(\left(I c x+\sqrt{-c^{2} x^{2}+1}\right)^{2}-1\right) c^{3}}{3\left(c^{2} x^{2}-1\right)}$$

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Problem 20: Result more than twice size of optimal antiderivative.
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$$\int x \sqrt{-c^{2} d x^{2}+d}\,(a+b \arcsin(c x))\, dx$$

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Optimal(type 3, 94 leaves, 2 steps):
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$$-\frac{\left(-c^{2} d x^{2}+d\right)^{3/2}(a+b \arcsin(c x))}{3 c^{2} d}+\frac{b x \sqrt{-c^{2} d x^{2}+d}}{3 c \sqrt{-c^{2} x^{2}+1}}-\frac{b c x^{3} \sqrt{-c^{2} d x^{2}+d}}{9 \sqrt{-c^{2} x^{2}+1}}$$

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Result(type 3, 342 leaves):
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$$-\frac{a\left(-c^{2} d x^{2}+d\right)^{3/2}}{3 c^{2} d}+b\left(\frac{\sqrt{-d\left(c^{2} x^{2}-1\right)}\left(4 c^{4} x^{4}-5 c^{2} x^{2}-4 I \sqrt{-c^{2} x^{2}+1}\, x^{3} c^{3}+3 I \sqrt{-c^{2} x^{2}+1}\, x c+1\right)(I+3 \arcsin(c x))}{72 c^{2}\left(c^{2} x^{2}-1\right)}\right.$$

$$-\frac{\sqrt{-d\left(c^{2} x^{2}-1\right)}\left(c^{2} x^{2}-I c x \sqrt{-c^{2} x^{2}+1}-1\right)(\arcsin(c x)+I)}{8 c^{2}\left(c^{2} x^{2}-1\right)}-\frac{\sqrt{-d\left(c^{2} x^{2}-1\right)}\left(I \sqrt{-c^{2} x^{2}+1}\, x c+c^{2} x^{2}-1\right)(\arcsin(c x)-I)}{8 c^{2}\left(c^{2} x^{2}-1\right)}$$

$$\left.+\frac{\sqrt{-d\left(c^{2} x^{2}-1\right)}\left(4 I \sqrt{-c^{2} x^{2}+1}\, x^{3} c^{3}+4 c^{4} x^{4}-3 I \sqrt{-c^{2} x^{2}+1}\, x c-5 c^{2} x^{2}+1\right)(-I+3 \arcsin(c x))}{72 c^{2}\left(c^{2} x^{2}-1\right)}\right)$$

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Problem 22: Result more than twice size of optimal antiderivative.
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$$\int \frac{\sqrt{-c^{2} d x^{2}+d}\,(a+b \arcsin(c x))}{x^{3}}\, dx$$

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Optimal(type 4, 221 leaves, 8 steps):
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$$-\frac{(a+b \arcsin(c x)) \sqrt{-c^{2} d x^{2}+d}}{2 x^{2}}-\frac{b c \sqrt{-c^{2} d x^{2}+d}}{2 x \sqrt{-c^{2} x^{2}+1}}+\frac{c^{2}(a+b \arcsin(c x)) \operatorname{arctanh}\left(I c x+\sqrt{-c^{2} x^{2}+1}\right) \sqrt{-c^{2} d x^{2}+d}}{\sqrt{-c^{2} x^{2}+1}}$$

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

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Result(type 4, 461 leaves):
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$$-\frac{a\left(-c^{2} d x^{2}+d\right)^{3/2}}{2 d x^{2}}+\frac{a \sqrt{d} \ln\left(\frac{2 d+2 \sqrt{d} \sqrt{-c^{2} d x^{2}+d}}{x}\right) c^{2}}{2}-\frac{a \sqrt{-c^{2} d x^{2}+d}\, c^{2}}{2}-\frac{b \sqrt{-d\left(c^{2} x^{2}-1\right)} \arcsin(c x)\, c^{2}}{2\left(c^{2} x^{2}-1\right)}$$

$$+\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\;c}{2\left(c^2x^2-1\right)x}+\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin(cx)}{2\left(c^2x^2-1\right)x^2}-\frac{b\sqrt{-c^2x^2+1}\,\sqrt{-d\left(c^2x^2-1\right)}\,c^2\arcsin(cx)\ln\left(1+\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)}{2c^2x^2-2}$$

$$+\frac{b\sqrt{-c^2x^2+1}\,\sqrt{-d\left(c^2x^2-1\right)}\,c^2\arcsin(cx)\ln\left(1-\mathrm{I}cx-\sqrt{-c^2x^2+1}\right)}{2c^2x^2-2}-\frac{\mathrm{I}b\sqrt{-c^2x^2+1}\,\sqrt{-d\left(c^2x^2-1\right)}\,c^2\operatorname{polylog}\left(2,\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)}{2c^2x^2-2}$$

$$+\frac{\mathrm{I}b\sqrt{-c^2x^2+1}\,\sqrt{-d\left(c^2x^2-1\right)}\,c^2\operatorname{polylog}\left(2,-\mathrm{I}cx-\sqrt{-c^2x^2+1}\right)}{2c^2x^2-2}$$

Problem 23: Result more than twice size of optimal antiderivative.

$$\int\left(-c^2dx^2+d\right)^{3/2}\left(a+b\arcsin(cx)\right)\,\mathrm{d}x$$

Optimal(type 3, 162 leaves, 6 steps):

$$\frac{x\left(-c^2dx^2+d\right)^{3/2}\left(a+b\arcsin(cx)\right)}{4}+\frac{3dx\left(a+b\arcsin(cx)\right)\sqrt{-c^2dx^2+d}}{8}-\frac{5bcdx^2\sqrt{-c^2dx^2+d}}{16\sqrt{-c^2x^2+1}}+\frac{bc^3dx^4\sqrt{-c^2dx^2+d}}{16\sqrt{-c^2x^2+1}}$$

$$+\frac{3d\left(a+b\arcsin(cx)\right)^2\sqrt{-c^2dx^2+d}}{16bc\sqrt{-c^2x^2+1}}$$

Result(type 3, 370 leaves):

$$\frac{ax\left(-c^2dx^2+d\right)^{3/2}}{4}+\frac{3adx\sqrt{-c^2dx^2+d}}{8}+\frac{3ad^2\arctan\left(\frac{\sqrt{c^2d}\;x}{\sqrt{-c^2dx^2+d}}\right)}{8\sqrt{c^2d}}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\;dc^4\arcsin(cx)x^5}{4\left(c^2x^2-1\right)}$$

$$+\frac{7b\sqrt{-d\left(c^2x^2-1\right)}\;dc^2\arcsin(cx)x^3}{8\left(c^2x^2-1\right)}-\frac{17b\sqrt{-d\left(c^2x^2-1\right)}\;d\sqrt{-c^2x^2+1}}{128c\left(c^2x^2-1\right)}-\frac{5b\sqrt{-d\left(c^2x^2-1\right)}\;d\arcsin(cx)x}{8\left(c^2x^2-1\right)}$$

$$-\frac{3b\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)^2d}{16c\left(c^2x^2-1\right)}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\;dc^3\sqrt{-c^2x^2+1}\;x^4}{16\left(c^2x^2-1\right)}+\frac{5b\sqrt{-d\left(c^2x^2-1\right)}\;dc\sqrt{-c^2x^2+1}\;x^2}{16\left(c^2x^2-1\right)}$$

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

$$\int x\left(-c^2dx^2+d\right)^{3/2}\left(a+b\arcsin(cx)\right)\,\mathrm{d}x$$

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

$$-\frac{\left(-c^2dx^2+d\right)^{5/2}\left(a+b\arcsin(cx)\right)}{5c^2d}+\frac{bdx\sqrt{-c^2dx^2+d}}{5c\sqrt{-c^2x^2+1}}-\frac{2bcdx^3\sqrt{-c^2dx^2+d}}{15\sqrt{-c^2x^2+1}}+\frac{bc^3dx^5\sqrt{-c^2dx^2+d}}{25\sqrt{-c^2x^2+1}}$$

Result(type 3, 596 leaves):

$$-\frac{a\left(-c^2 d x^2+d\right)^{5/2}}{5 c^2 d}+b\left(-\frac{\sqrt{-d\left(c^2x^2-1\right)}\left(16x^6c^6-28c^4x^4-16\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^5c^5+13c^2x^2+20\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3-5\,\mathrm{I}\sqrt{-c^2x^2+1}\,xc-1\right)\left(\mathrm{I}+5\arcsin(cx)\right)d}{800\left(c^2x^2-1\right)c^2}\right.$$

$$+\frac{\sqrt{-d\left(c^2x^2-1\right)}\left(4c^4x^4-5c^2x^2-4\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3+3\,\mathrm{I}\sqrt{-c^2x^2+1}\,xc+1\right)\left(\mathrm{I}+3\arcsin(cx)\right)d}{96\left(c^2x^2-1\right)c^2}$$

$$-\frac{\sqrt{-d\left(c^2x^2-1\right)}\left(c^2x^2-\mathrm{I}cx\sqrt{-c^2x^2+1}-1\right)\left(\arcsin(cx)+\mathrm{I}\right)d}{16\left(c^2x^2-1\right)c^2}-\frac{\sqrt{-d\left(c^2x^2-1\right)}\left(\mathrm{I}\sqrt{-c^2x^2+1}\,xc+c^2x^2-1\right)\left(\arcsin(cx)-\mathrm{I}\right)d}{16\left(c^2x^2-1\right)c^2}$$

$$+\frac{\sqrt{-d\left(c^2x^2-1\right)}\left(4\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3+4c^4x^4-3\,\mathrm{I}\sqrt{-c^2x^2+1}\,xc-5c^2x^2+1\right)\left(-\mathrm{I}+3\arcsin(cx)\right)d}{96\left(c^2x^2-1\right)c^2}$$

$$\left.-\frac{\sqrt{-d\left(c^2x^2-1\right)}\left(16\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^5c^5+16x^6c^6-20\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3-28c^4x^4+5\,\mathrm{I}\sqrt{-c^2x^2+1}\,xc+13c^2x^2-1\right)\left(-\mathrm{I}+5\arcsin(cx)\right)d}{800\left(c^2x^2-1\right)c^2}\right)$$

Problem 26: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(-c^2dx^2+d\right)^{5/2}\left(a+b\arcsin(cx)\right)}{x^{10}}\,dx$$

Optimal(type 3, 244 leaves, 6 steps):

$$-\frac{\left(-c^2dx^2+d\right)^{7/2}\left(a+b\arcsin(cx)\right)}{9dx^9}-\frac{2c^2\left(-c^2dx^2+d\right)^{7/2}\left(a+b\arcsin(cx)\right)}{63dx^7}-\frac{bcd^2\left(-c^2x^2+1\right)^{7/2}\sqrt{-c^2dx^2+d}}{72x^8}-\frac{bc^3d^2\sqrt{-c^2dx^2+d}}{189x^6\sqrt{-c^2x^2+1}}$$

$$+\frac{bc^5d^2\sqrt{-c^2dx^2+d}}{42x^4\sqrt{-c^2x^2+1}}-\frac{bc^7d^2\sqrt{-c^2dx^2+d}}{21x^2\sqrt{-c^2x^2+1}}-\frac{2bc^9d^2\ln(x)\sqrt{-c^2dx^2+d}}{63\sqrt{-c^2x^2+1}}$$

Result(type ?, 5322 leaves): Display of huge result suppressed!

Problem 27: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(-c^2dx^2+d\right)^{5/2}\left(a+b\arcsin(cx)\right)}{x^{12}}\,dx$$

Optimal(type 3, 313 leaves, 5 steps):

$$-\frac{\left(-c^2dx^2+d\right)^{7/2}\left(a+b\arcsin(cx)\right)}{11dx^{11}}-\frac{4c^2\left(-c^2dx^2+d\right)^{7/2}\left(a+b\arcsin(cx)\right)}{99dx^9}-\frac{8c^4\left(-c^2dx^2+d\right)^{7/2}\left(a+b\arcsin(cx)\right)}{693dx^7}-\frac{bcd^2\sqrt{-c^2dx^2+d}}{110x^{10}\sqrt{-c^2x^2+1}}$$

$$+\frac{23bc^3d^2\sqrt{-c^2dx^2+d}}{792x^8\sqrt{-c^2x^2+1}}-\frac{113bc^5d^2\sqrt{-c^2dx^2+d}}{4158x^6\sqrt{-c^2x^2+1}}+\frac{bc^7d^2\sqrt{-c^2dx^2+d}}{924x^4\sqrt{-c^2x^2+1}}+\frac{2bc^9d^2\sqrt{-c^2dx^2+d}}{693x^2\sqrt{-c^2x^2+1}}-\frac{8bc^{11}d^2\ln(x)\sqrt{-c^2dx^2+d}}{693\sqrt{-c^2x^2+1}}$$

Result(type ?, 6757 leaves): Display of huge result suppressed!

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

$$\int \frac{x\,(a+b\arcsin(cx))}{\sqrt{-c^2 d x^2+d}}\,dx$$

Optimal(type 3, 61 leaves, 2 steps):

$$\frac{b x\sqrt{-c^2 x^2+1}}{c\sqrt{-c^2 d x^2+d}}-\frac{(a+b\arcsin(cx))\sqrt{-c^2 d x^2+d}}{c^2 d}$$

Result(type 3, 158 leaves):

$$-\frac{a\sqrt{-c^2 d x^2+d}}{c^2 d}+b\left(-\frac{(\arcsin(cx)+I)\sqrt{-d\,(c^2x^2-1)}\,\left(c^2x^2-I\,c\,x\sqrt{-c^2x^2+1}-1\right)}{2\,c^2 d\,(c^2x^2-1)}\right.$$
$$\left.-\frac{(\arcsin(cx)-I)\sqrt{-d\,(c^2x^2-1)}\,\left(I\sqrt{-c^2x^2+1}\,x c+c^2x^2-1\right)}{2\,c^2 d\,(c^2x^2-1)}\right)$$

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

$$\int \frac{a+b\arcsin(cx)}{x^3\sqrt{-c^2 d x^2+d}}\,dx$$

Optimal(type 4, 225 leaves, 8 steps):

$$-\frac{b c\sqrt{-c^2x^2+1}}{2x\sqrt{-c^2dx^2+d}}-\frac{c^2\,(a+b\arcsin(cx))\,\mathrm{arctanh}\left(I\,c\,x+\sqrt{-c^2x^2+1}\right)\sqrt{-c^2x^2+1}}{\sqrt{-c^2dx^2+d}}+\frac{I\,b\,c^2\,\mathrm{polylog}\left(2,-I\,c\,x-\sqrt{-c^2x^2+1}\right)\sqrt{-c^2x^2+1}}{2\sqrt{-c^2dx^2+d}}$$
$$-\frac{I\,b\,c^2\,\mathrm{polylog}\left(2,I\,c\,x+\sqrt{-c^2x^2+1}\right)\sqrt{-c^2x^2+1}}{2\sqrt{-c^2dx^2+d}}-\frac{(a+b\arcsin(cx))\sqrt{-c^2dx^2+d}}{2\,d\,x^2}$$

Result(type 4, 460 leaves):

$$-\frac{a\sqrt{-c^2dx^2+d}}{2\,d\,x^2}-\frac{a\,c^2\ln\left(\frac{2\,d+2\sqrt{d}\sqrt{-c^2dx^2+d}}{x}\right)}{2\sqrt{d}}-\frac{b\sqrt{-d\,(c^2x^2-1)}\,\arcsin(cx)\,c^2}{2\,d\,(c^2x^2-1)}+\frac{b\sqrt{-d\,(c^2x^2-1)}\sqrt{-c^2x^2+1}\,c}{2\,x\,d\,(c^2x^2-1)}$$
$$+\frac{b\sqrt{-d\,(c^2x^2-1)}\,\arcsin(cx)}{2\,x^2\,d\,(c^2x^2-1)}-\frac{b\sqrt{-c^2x^2+1}\sqrt{-d\,(c^2x^2-1)}\,c^2\arcsin(cx)\ln\left(1-I\,c\,x-\sqrt{-c^2x^2+1}\right)}{2\,d\,(c^2x^2-1)}$$
$$+\frac{b\sqrt{-c^2x^2+1}\sqrt{-d\,(c^2x^2-1)}\,c^2\arcsin(cx)\ln\left(1+I\,c\,x+\sqrt{-c^2x^2+1}\right)}{2\,d\,(c^2x^2-1)}+\frac{I\,b\sqrt{-c^2x^2+1}\sqrt{-d\,(c^2x^2-1)}\,c^2\,\mathrm{polylog}\left(2,I\,c\,x+\sqrt{-c^2x^2+1}\right)}{2\,d\,(c^2x^2-1)}$$
$$-\frac{I\,b\sqrt{-c^2x^2+1}\sqrt{-d\,(c^2x^2-1)}\,c^2\,\mathrm{polylog}\left(2,-I\,c\,x-\sqrt{-c^2x^2+1}\right)}{2\,d\,(c^2x^2-1)}$$

Problem 33: Result more than twice size of optimal antiderivative.

$$\int \frac{a + b\arcsin(c x)}{x^4 \sqrt{-c^2 d x^2 + d}}\, dx$$

Optimal(type 3, 127 leaves, 4 steps):

$$-\frac{b c \sqrt{-c^2 x^2 + 1}}{6 x^2 \sqrt{-c^2 d x^2 + d}} + \frac{2 b c^3 \ln(x) \sqrt{-c^2 x^2 + 1}}{3 \sqrt{-c^2 d x^2 + d}} - \frac{(a + b\arcsin(c x)) \sqrt{-c^2 d x^2 + d}}{3 d x^3} - \frac{2 c^2 (a + b\arcsin(c x)) \sqrt{-c^2 d x^2 + d}}{3 d x}$$

Result(type 3, 848 leaves):

$$-\frac{a \sqrt{-c^2 d x^2 + d}}{3 d x^3} - \frac{2 a c^2 \sqrt{-c^2 d x^2 + d}}{3 d x} + \frac{I b \sqrt{-d (c^2 x^2 - 1)}\, x^3 c^6}{3 (3 c^4 x^4 - 2 c^2 x^2 - 1) d} - \frac{2 I b \sqrt{-d (c^2 x^2 - 1)} \arcsin(c x) \sqrt{-c^2 x^2 + 1}\, c^3}{3 (3 c^4 x^4 - 2 c^2 x^2 - 1) d}$$
$$- \frac{I b \sqrt{-d (c^2 x^2 - 1)}\, x (-c^2 x^2 + 1) c^4}{3 (3 c^4 x^4 - 2 c^2 x^2 - 1) d} - \frac{2 I b \sqrt{-d (c^2 x^2 - 1)}\, x^5 c^8}{3 (3 c^4 x^4 - 2 c^2 x^2 - 1) d} + \frac{4 I b \sqrt{-c^2 x^2 + 1} \sqrt{-d (c^2 x^2 - 1)} \arcsin(c x) c^3}{3 d (c^2 x^2 - 1)}$$
$$- \frac{2 b \sqrt{-d (c^2 x^2 - 1)}\, x^3 \arcsin(c x) c^6}{(3 c^4 x^4 - 2 c^2 x^2 - 1) d} + \frac{I b \sqrt{-d (c^2 x^2 - 1)}\, x c^4}{3 (3 c^4 x^4 - 2 c^2 x^2 - 1) d} - \frac{2 I b \sqrt{-d (c^2 x^2 - 1)}\, x^2 \arcsin(c x) \sqrt{-c^2 x^2 + 1}\, c^5}{(3 c^4 x^4 - 2 c^2 x^2 - 1) d}$$
$$- \frac{2 I b \sqrt{-d (c^2 x^2 - 1)}\, x^3 (-c^2 x^2 + 1) c^6}{3 (3 c^4 x^4 - 2 c^2 x^2 - 1) d} + \frac{b \sqrt{-d (c^2 x^2 - 1)}\, x \arcsin(c x) c^4}{3 (3 c^4 x^4 - 2 c^2 x^2 - 1) d} + \frac{b \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1}\, c^3}{2 (3 c^4 x^4 - 2 c^2 x^2 - 1) d}$$
$$+ \frac{4 b \sqrt{-d (c^2 x^2 - 1)} \arcsin(c x) c^2}{3 (3 c^4 x^4 - 2 c^2 x^2 - 1) d x} + \frac{b \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1}\, c}{6 (3 c^4 x^4 - 2 c^2 x^2 - 1) d x^2} + \frac{b \sqrt{-d (c^2 x^2 - 1)} \arcsin(c x)}{3 (3 c^4 x^4 - 2 c^2 x^2 - 1) d x^3}$$
$$- \frac{2 b \sqrt{-c^2 x^2 + 1} \sqrt{-d (c^2 x^2 - 1)} \ln\left(\left(I c x + \sqrt{-c^2 x^2 + 1}\right)^2 - 1\right) c^3}{3 d (c^2 x^2 - 1)}$$

Problem 34: Result more than twice size of optimal antiderivative.

$$\int \frac{x^5 (a + b\arcsin(c x))}{(-c^2 d x^2 + d)^{3/2}}\, dx$$

Optimal(type 3, 197 leaves, 5 steps):

$$-\frac{(-c^2 d x^2 + d)^{3/2} (a + b\arcsin(c x))}{3 c^6 d^3} + \frac{a + b\arcsin(c x)}{c^6 d \sqrt{-c^2 d x^2 + d}} + \frac{2 (a + b\arcsin(c x)) \sqrt{-c^2 d x^2 + d}}{c^6 d^2} - \frac{5 b x \sqrt{-c^2 d x^2 + d}}{3 c^5 d^2 \sqrt{-c^2 x^2 + 1}} - \frac{b x^3 \sqrt{-c^2 d x^2 + d}}{9 c^3 d^2 \sqrt{-c^2 x^2 + 1}}$$
$$- \frac{b \operatorname{arctanh}(c x) \sqrt{-c^2 d x^2 + d}}{c^6 d^2 \sqrt{-c^2 x^2 + 1}}$$

Result(type 3, 422 leaves):

$$-\frac{a x^4}{3 c^2 d \sqrt{-c^2 d x^2 + d}} - \frac{4 a x^2}{3 c^4 d \sqrt{-c^2 d x^2 + d}} + \frac{8 a}{3 c^6 d \sqrt{-c^2 d x^2 + d}} - \frac{8 b \sqrt{-d (c^2 x^2 - 1)} \arcsin(c x)}{3 c^6 d^2 (c^2 x^2 - 1)} + \frac{b \sqrt{-d (c^2 x^2 - 1)} \arcsin(c x) x^4}{3 c^2 d^2 (c^2 x^2 - 1)}$$

$$+\frac{4 b \sqrt{-d \left(c^2 x^2-1\right)}\, \arcsin(c x)\, x^2}{3 c^4 d^2 \left(c^2 x^2-1\right)}-\frac{b \sqrt{-c^2 x^2+1}\, \sqrt{-d \left(c^2 x^2-1\right)}\, \ln\left(\mathrm{I} c x+\sqrt{-c^2 x^2+1}-\mathrm{I}\right)}{c^6 d^2 \left(c^2 x^2-1\right)}$$

$$+\frac{b \sqrt{-c^2 x^2+1}\, \sqrt{-d \left(c^2 x^2-1\right)}\, \ln\left(\mathrm{I} c x+\sqrt{-c^2 x^2+1}+\mathrm{I}\right)}{c^6 d^2 \left(c^2 x^2-1\right)}+\frac{b \sqrt{-d \left(c^2 x^2-1\right)}\, \sqrt{-c^2 x^2+1}\, x^3}{9 c^3 d^2 \left(c^2 x^2-1\right)}+\frac{5 b \sqrt{-d \left(c^2 x^2-1\right)}\, \sqrt{-c^2 x^2+1}\, x}{3 c^5 d^2 \left(c^2 x^2-1\right)}$$

Problem 35: Result more than twice size of optimal antiderivative.

$$\int \frac{x^4 \left(a+b \arcsin(c x)\right)}{\left(-c^2 d x^2+d\right)^{3/2}}\, dx$$

Optimal(type 3, 190 leaves, 7 steps):

$$\frac{x^3 \left(a+b \arcsin(c x)\right)}{c^2 d \sqrt{-c^2 d x^2+d}}-\frac{b x^2 \sqrt{-c^2 x^2+1}}{4 c^3 d \sqrt{-c^2 d x^2+d}}-\frac{3 \left(a+b \arcsin(c x)\right)^2 \sqrt{-c^2 x^2+1}}{4 b c^5 d \sqrt{-c^2 d x^2+d}}+\frac{b \ln\left(-c^2 x^2+1\right) \sqrt{-c^2 x^2+1}}{2 c^5 d \sqrt{-c^2 d x^2+d}}$$

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

Result(type 3, 435 leaves):

$$-\frac{a x^3}{2 c^2 d \sqrt{-c^2 d x^2+d}}+\frac{3 a x}{2 c^4 d \sqrt{-c^2 d x^2+d}}-\frac{3 a \arctan\left(\frac{\sqrt{c^2 d}\, x}{\sqrt{-c^2 d x^2+d}}\right)}{2 c^4 d \sqrt{c^2 d}}+\frac{3 b \sqrt{-c^2 x^2+1}\, \sqrt{-d \left(c^2 x^2-1\right)}\, \arcsin(c x)^2}{4 \left(c^2 x^2-1\right) c^5 d^2}$$

$$+\frac{b \sqrt{-d \left(c^2 x^2-1\right)}\, \sqrt{-c^2 x^2+1}\, x^2}{4 \left(c^2 x^2-1\right) c^3 d^2}+\frac{b \sqrt{-d \left(c^2 x^2-1\right)}\, \arcsin(c x)\, x^3}{2 \left(c^2 x^2-1\right) c^2 d^2}-\frac{b \sqrt{-d \left(c^2 x^2-1\right)}\, \sqrt{-c^2 x^2+1}}{8 \left(c^2 x^2-1\right) c^5 d^2}$$

$$+\frac{\mathrm{I} b \sqrt{-c^2 x^2+1}\, \sqrt{-d \left(c^2 x^2-1\right)}\, \arcsin(c x)}{\left(c^2 x^2-1\right) c^5 d^2}-\frac{3 b \sqrt{-d \left(c^2 x^2-1\right)}\, \arcsin(c x)\, x}{2 \left(c^2 x^2-1\right) c^4 d^2}-\frac{b \sqrt{-c^2 x^2+1}\, \sqrt{-d \left(c^2 x^2-1\right)}\, \ln\left(1+\left(\mathrm{I} c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{\left(c^2 x^2-1\right) c^5 d^2}$$

Problem 36: Result more than twice size of optimal antiderivative.

$$\int \frac{x^2 \left(a+b \arcsin(c x)\right)}{\left(-c^2 d x^2+d\right)^{3/2}}\, dx$$

Optimal(type 3, 121 leaves, 3 steps):

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

Result(type 3, 273 leaves):

$$\frac{a x}{c^2 d \sqrt{-c^2 d x^2 + d}} - \frac{a \arctan\left(\frac{\sqrt{c^2 d}\, x}{\sqrt{-c^2 d x^2 + d}}\right)}{c^2 d \sqrt{c^2 d}} + \frac{b \sqrt{-c^2 x^2 + 1}\, \sqrt{-d\, (c^2 x^2 - 1)}\, \arcsin(c x)^2}{2 c^3\, (c^2 x^2 - 1)\, d^2} + \frac{I b \sqrt{-c^2 x^2 + 1}\, \sqrt{-d\, (c^2 x^2 - 1)}\, \arcsin(c x)}{c^3\, (c^2 x^2 - 1)\, d^2}$$
$$- \frac{b \sqrt{-d\, (c^2 x^2 - 1)}\, \arcsin(c x)\, x}{c^2\, (c^2 x^2 - 1)\, d^2} - \frac{b \sqrt{-c^2 x^2 + 1}\, \sqrt{-d\, (c^2 x^2 - 1)}\, \ln\left(1 + \left(I c x + \sqrt{-c^2 x^2 + 1}\right)^2\right)}{c^3\, (c^2 x^2 - 1)\, d^2}$$

Problem 37: Result more than twice size of optimal antiderivative.

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

Optimal(type 3, 72 leaves, 2 steps):

$$\frac{x\, (a + b \arcsin(c x))}{d \sqrt{-c^2 d x^2 + d}} + \frac{b \ln(-c^2 x^2 + 1)\, \sqrt{-c^2 x^2 + 1}}{2 c d \sqrt{-c^2 d x^2 + d}}$$

Result(type 3, 176 leaves):

$$\frac{a x}{d \sqrt{-c^2 d x^2 + d}} + \frac{I b \sqrt{-c^2 x^2 + 1}\, \sqrt{-d\, (c^2 x^2 - 1)}\, \arcsin(c x)}{c\, (c^2 x^2 - 1)\, d^2} - \frac{b \sqrt{-d\, (c^2 x^2 - 1)}\, \arcsin(c x)\, x}{(c^2 x^2 - 1)\, d^2}$$
$$- \frac{b \sqrt{-c^2 x^2 + 1}\, \sqrt{-d\, (c^2 x^2 - 1)}\, \ln\left(1 + \left(I c x + \sqrt{-c^2 x^2 + 1}\right)^2\right)}{c\, (c^2 x^2 - 1)\, d^2}$$

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

$$\int \frac{x^4\, (a + b \arcsin(c x))}{(-c^2 d x^2 + d)^{5/2}}\, dx$$

Optimal(type 3, 188 leaves, 7 steps):

$$\frac{x^3\, (a + b \arcsin(c x))}{3 c^2 d\, (-c^2 d x^2 + d)^{3/2}} - \frac{x\, (a + b \arcsin(c x))}{c^4 d^2 \sqrt{-c^2 d x^2 + d}} - \frac{b}{6 c^5 d^2 \sqrt{-c^2 x^2 + 1}\, \sqrt{-c^2 d x^2 + d}} + \frac{(a + b \arcsin(c x))^2 \sqrt{-c^2 x^2 + 1}}{2 b c^5 d^2 \sqrt{-c^2 d x^2 + d}}$$
$$- \frac{2 b \ln(-c^2 x^2 + 1)\, \sqrt{-c^2 x^2 + 1}}{3 c^5 d^2 \sqrt{-c^2 d x^2 + d}}$$

Result(type 3, 1509 leaves):

$$\frac{a x^3}{3 c^2 d\, (-c^2 d x^2 + d)^{3/2}} - \frac{a x}{c^4 d^2 \sqrt{-c^2 d x^2 + d}} + \frac{a \arctan\left(\frac{\sqrt{c^2 d}\, x}{\sqrt{-c^2 d x^2 + d}}\right)}{c^4 d^2 \sqrt{c^2 d}} + \frac{2 I b \sqrt{-d\, (c^2 x^2 - 1)}\, x}{d^3\, (24 c^8 x^8 - 87 x^6 c^6 + 118 c^4 x^4 - 71 c^2 x^2 + 16)\, c^4}$$

$$- \frac{8 I b \sqrt{-c^2 x^2+1}\, \sqrt{-d\left(c^2 x^2-1\right)}\, \arcsin(c x)}{3 c^5 d^3\left(c^2 x^2-1\right)} - \frac{2 I b \sqrt{-d\left(c^2 x^2-1\right)}\, \left(-c^2 x^2+1\right) x}{d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right) c^4}$$

$$- \frac{8 I b \sqrt{-d\left(c^2 x^2-1\right)}\, c^2 x^7}{3 d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right)} + \frac{14 I b \sqrt{-d\left(c^2 x^2-1\right)}\, \left(-c^2 x^2+1\right) x^3}{3 d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right) c^2}$$

$$+ \frac{220 I b \sqrt{-d\left(c^2 x^2-1\right)}\, \arcsin(c x) \sqrt{-c^2 x^2+1}\, x^2}{3 d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right) c^3} - \frac{20 I b \sqrt{-d\left(c^2 x^2-1\right)}\, x^3}{3 d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right) c^2}$$

$$- \frac{4 b \sqrt{-d\left(c^2 x^2-1\right)}\, \sqrt{-c^2 x^2+1}\, x^4}{d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right) c} + \frac{13 b \sqrt{-d\left(c^2 x^2-1\right)}\, \sqrt{-c^2 x^2+1}\, x^2}{2 d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right) c^3}$$

$$+ \frac{4 b \sqrt{-c^2 x^2+1}\, \sqrt{-d\left(c^2 x^2-1\right)}\, \ln\left(1+\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{3 c^5 d^3\left(c^2 x^2-1\right)} + \frac{32 b \sqrt{-d\left(c^2 x^2-1\right)}\, c^2 \arcsin(c x)\, x^7}{d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right)}$$

$$- \frac{8 b \sqrt{-d\left(c^2 x^2-1\right)}\, \sqrt{-c^2 x^2+1}}{3 d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right) c^5} - \frac{76 b \sqrt{-d\left(c^2 x^2-1\right)}\, \arcsin(c x)\, x^5}{d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right)}$$

$$+ \frac{22 I b \sqrt{-d\left(c^2 x^2-1\right)}\, x^5}{3 d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right)} + \frac{181 b \sqrt{-d\left(c^2 x^2-1\right)}\, \arcsin(c x)\, x^3}{3 d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right) c^2}$$

$$- \frac{16 b \sqrt{-d\left(c^2 x^2-1\right)}\, \arcsin(c x)\, x}{d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right) c^4} - \frac{b \sqrt{-c^2 x^2+1}\, \sqrt{-d\left(c^2 x^2-1\right)}\, \arcsin(c x)^2}{2 c^5 d^3\left(c^2 x^2-1\right)}$$

$$- \frac{8 I b \sqrt{-d\left(c^2 x^2-1\right)}\, \left(-c^2 x^2+1\right) x^5}{3 d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right)} - \frac{84 I b \sqrt{-d\left(c^2 x^2-1\right)}\, \arcsin(c x) \sqrt{-c^2 x^2+1}\, x^4}{d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right) c}$$

$$+ \frac{32 I b \sqrt{-d\left(c^2 x^2-1\right)}\, c \arcsin(c x) \sqrt{-c^2 x^2+1}\, x^6}{d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right)} - \frac{64 I b \sqrt{-d\left(c^2 x^2-1\right)}\, \arcsin(c x) \sqrt{-c^2 x^2+1}}{3 d^3\left(24 c^8 x^8-87 x^6 c^6+118 c^4 x^4-71 c^2 x^2+16\right) c^5}$$

Problem 40: Result more than twice size of optimal antiderivative.

$$\int \frac{x^2\left(a+b \arcsin(c x)\right)}{\left(-c^2 d x^2+d\right)^{5/2}}\, dx$$

Optimal(type 3, 109 leaves, 4 steps):

$$\frac{x^3\left(a+b \arcsin(c x)\right)}{3 d\left(-c^2 d x^2+d\right)^{3/2}} - \frac{b}{6 c^3 d^2 \sqrt{-c^2 x^2+1}\, \sqrt{-c^2 d x^2+d}} - \frac{b \ln\left(-c^2 x^2+1\right) \sqrt{-c^2 x^2+1}}{6 c^3 d^2 \sqrt{-c^2 d x^2+d}}$$

Result(type 3, 1218 leaves):

$$\frac{a x}{3 c^2 d\left(-c^2 d x^2+d\right)^{3/2}} - \frac{a x}{3 c^2 d^2 \sqrt{-c^2 d x^2+d}} + \frac{I b \sqrt{-d\left(c^2 x^2-1\right)}\, \left(-c^2 x^2+1\right) x^3}{6 d^3\left(3 c^8 x^8-9 x^6 c^6+10 c^4 x^4-5 c^2 x^2+1\right)} - \frac{I b \sqrt{-d\left(c^2 x^2-1\right)}\, x^3}{6 d^3\left(3 c^8 x^8-9 x^6 c^6+10 c^4 x^4-5 c^2 x^2+1\right)}$$

$$- \frac{I b \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1} \arcsin(c x)}{3 d^3 (3 c^8 x^8 - 9 x^6 c^6 + 10 c^4 x^4 - 5 c^2 x^2 + 1) c^3} + \frac{b \sqrt{-d (c^2 x^2 - 1)} c^4 \arcsin(c x) x^7}{d^3 (3 c^8 x^8 - 9 x^6 c^6 + 10 c^4 x^4 - 5 c^2 x^2 + 1)} + \frac{I b \sqrt{-d (c^2 x^2 - 1)} c^3 \sqrt{-c^2 x^2 + 1} \arcsin(c x) x^6}{d^3 (3 c^8 x^8 - 9 x^6 c^6 + 10 c^4 x^4 - 5 c^2 x^2 + 1)}$$
$$- \frac{b \sqrt{-d (c^2 x^2 - 1)} c \sqrt{-c^2 x^2 + 1} x^4}{2 d^3 (3 c^8 x^8 - 9 x^6 c^6 + 10 c^4 x^4 - 5 c^2 x^2 + 1)} + \frac{I b \sqrt{-d (c^2 x^2 - 1)} c^2 x^5}{3 d^3 (3 c^8 x^8 - 9 x^6 c^6 + 10 c^4 x^4 - 5 c^2 x^2 + 1)} - \frac{2 I b \sqrt{-d (c^2 x^2 - 1)} c \sqrt{-c^2 x^2 + 1} \arcsin(c x) x^4}{d^3 (3 c^8 x^8 - 9 x^6 c^6 + 10 c^4 x^4 - 5 c^2 x^2 + 1)}$$
$$- \frac{b \sqrt{-d (c^2 x^2 - 1)} c^2 \arcsin(c x) x^5}{d^3 (3 c^8 x^8 - 9 x^6 c^6 + 10 c^4 x^4 - 5 c^2 x^2 + 1)} - \frac{2 I b \sqrt{-c^2 x^2 + 1} \sqrt{-d (c^2 x^2 - 1)} \arcsin(c x)}{3 c^3 d^3 (c^2 x^2 - 1)} + \frac{b \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1} x^2}{2 d^3 (3 c^8 x^8 - 9 x^6 c^6 + 10 c^4 x^4 - 5 c^2 x^2 + 1) c}$$
$$- \frac{I b \sqrt{-d (c^2 x^2 - 1)} c^2 (-c^2 x^2 + 1) x^5}{6 d^3 (3 c^8 x^8 - 9 x^6 c^6 + 10 c^4 x^4 - 5 c^2 x^2 + 1)} - \frac{I b \sqrt{-d (c^2 x^2 - 1)} c^4 x^7}{6 d^3 (3 c^8 x^8 - 9 x^6 c^6 + 10 c^4 x^4 - 5 c^2 x^2 + 1)} + \frac{b \sqrt{-d (c^2 x^2 - 1)} \arcsin(c x) x^3}{3 d^3 (3 c^8 x^8 - 9 x^6 c^6 + 10 c^4 x^4 - 5 c^2 x^2 + 1)}$$
$$- \frac{b \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1}}{6 d^3 (3 c^8 x^8 - 9 x^6 c^6 + 10 c^4 x^4 - 5 c^2 x^2 + 1) c^3} + \frac{4 I b \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1} \arcsin(c x) x^2}{3 d^3 (3 c^8 x^8 - 9 x^6 c^6 + 10 c^4 x^4 - 5 c^2 x^2 + 1) c}$$
$$+ \frac{b \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1} \ln\left(1 + \left(I c x + \sqrt{-c^2 x^2 + 1}\right)^2\right)}{3 c^3 d^3 (c^2 x^2 - 1)}$$

Problem 41: Unable to integrate problem.

$$\int \frac{(f x)^{3/2} (a + b \arcsin(c x))}{\sqrt{-c^2 d x^2 + d}} \, dx$$

Optimal(type 5, 109 leaves, 1 step):

$$\frac{2 (f x)^{5/2} (a + b \arcsin(c x)) \operatorname{hypergeom}\left(\left[\frac{1}{2}, \frac{5}{4}\right], \left[\frac{9}{4}\right], c^2 x^2\right) \sqrt{-c^2 x^2 + 1}}{5 f \sqrt{-c^2 d x^2 + d}}$$
$$- \frac{4 b c (f x)^{7/2} \mathit{HypergeometricPFQ}\left(\left[1, \frac{7}{4}, \frac{7}{4}\right], \left[\frac{9}{4}, \frac{11}{4}\right], c^2 x^2\right) \sqrt{-c^2 x^2 + 1}}{35 f^2 \sqrt{-c^2 d x^2 + d}}$$

Result(type 8, 29 leaves):

$$\int \frac{(f x)^{3/2} (a + b \arcsin(c x))}{\sqrt{-c^2 d x^2 + d}} \, dx$$

Problem 44: Unable to integrate problem.

$$\int \frac{x^m (a + b \arcsin(c x))}{\sqrt{-c^2 d x^2 + d}} \, dx$$

Optimal(type 5, 141 leaves, 1 step):

$$\frac{x^{1+m}\left(a+b\arcsin(cx)\right)\text{hypergeom}\left(\left[\frac{1}{2},\frac{1}{2}+\frac{m}{2}\right],\left[\frac{3}{2}+\frac{m}{2}\right],c^2x^2\right)\sqrt{-c^2x^2+1}}{(1+m)\sqrt{-c^2dx^2+d}}$$
$$-\frac{b\,c\,x^{2+m}\,\mathit{HypergeometricPFQ}\left(\left[1,1+\frac{m}{2},1+\frac{m}{2}\right],\left[\frac{3}{2}+\frac{m}{2},2+\frac{m}{2}\right],c^2x^2\right)\sqrt{-c^2x^2+1}}{\left(m^2+3m+2\right)\sqrt{-c^2dx^2+d}}$$

Result(type 8, 27 leaves):

$$\int\frac{x^m\left(a+b\arcsin(cx)\right)}{\sqrt{-c^2dx^2+d}}\,dx$$

Problem 45: Unable to integrate problem.

$$\int\frac{x^m\arcsin(ax)}{\sqrt{-a^2x^2+1}}\,dx$$

Optimal(type 5, 86 leaves, 1 step):

$$\frac{x^{1+m}\arcsin(ax)\,\text{hypergeom}\left(\left[\frac{1}{2},\frac{1}{2}+\frac{m}{2}\right],\left[\frac{3}{2}+\frac{m}{2}\right],a^2x^2\right)}{1+m}-\frac{a\,x^{2+m}\,\mathit{HypergeometricPFQ}\left(\left[1,1+\frac{m}{2},1+\frac{m}{2}\right],\left[\frac{3}{2}+\frac{m}{2},2+\frac{m}{2}\right],a^2x^2\right)}{m^2+3m+2}$$

Result(type 8, 22 leaves):

$$\int\frac{x^m\arcsin(ax)}{\sqrt{-a^2x^2+1}}\,dx$$

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

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

Optimal(type 4, 175 leaves, 9 steps):

$$-\frac{2\left(a+b\arcsin(cx)\right)^2\operatorname{arctanh}\left(\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)^2\right)}{d}+\frac{\mathrm{I}b\left(a+b\arcsin(cx)\right)\operatorname{polylog}\left(2,-\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)^2\right)}{d}$$
$$-\frac{\mathrm{I}b\left(a+b\arcsin(cx)\right)\operatorname{polylog}\left(2,\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)^2\right)}{d}-\frac{b^2\operatorname{polylog}\left(3,-\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)^2\right)}{2d}+\frac{b^2\operatorname{polylog}\left(3,\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)^2\right)}{2d}$$

Result(type 4, 528 leaves):

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

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

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

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

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

$$+\frac{I b^{2} \arcsin(c x) \operatorname{polylog}\left(2,-\left(I c x+\sqrt{-c^{2} x^{2}+1}\right)^{2}\right)}{d}$$

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Problem 50: Result more than twice size of optimal antiderivative.
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$$\int \frac{(a+b \arcsin(c x))^{2}}{x^{3}\left(-c^{2} d x^{2}+d\right)} dx$$

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Optimal(type 4, 250 leaves, 12 steps):
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$$-\frac{(a+b \arcsin(c x))^{2}}{2 d x^{2}}-\frac{2 c^{2}(a+b \arcsin(c x))^{2} \operatorname{arctanh}\left(\left(I c x+\sqrt{-c^{2} x^{2}+1}\right)^{2}\right)}{d}+\frac{b^{2} c^{2} \ln(x)}{d}$$

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

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

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Result(type 4, 792 leaves):
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$$\frac{c^{2} b^{2} \arcsin(c x)^{2} \ln\left(1-I c x-\sqrt{-c^{2} x^{2}+1}\right)}{d}+\frac{c^{2} b^{2} \arcsin(c x)^{2} \ln\left(1+I c x+\sqrt{-c^{2} x^{2}+1}\right)}{d}-\frac{a b \arcsin(c x)}{d x^{2}}+\frac{I c^{2} a b}{d}$$

$$-\frac{c^{2} b^{2} \arcsin(c x)^{2} \ln\left(1+\left(I c x+\sqrt{-c^{2} x^{2}+1}\right)^{2}\right)}{d}+\frac{I c^{2} b^{2} \arcsin(c x)}{d}-\frac{a^{2}}{2 d x^{2}}-\frac{b^{2} \arcsin(c x)^{2}}{2 d x^{2}}-\frac{2 c^{2} b^{2} \ln\left(I c x+\sqrt{-c^{2} x^{2}+1}\right)}{d}$$

$$+\frac{c^{2} b^{2} \ln\left(I c x+\sqrt{-c^{2} x^{2}+1}-1\right)}{d}+\frac{c^{2} b^{2} \ln\left(1+I c x+\sqrt{-c^{2} x^{2}+1}\right)}{d}-\frac{c^{2} a^{2} \ln(c x+1)}{2 d}+\frac{c^{2} a^{2} \ln(c x)}{d}-\frac{c^{2} a^{2} \ln(c x-1)}{2 d}$$

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

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

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

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

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

Problem 51: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 249 leaves, 12 steps):

$$\frac{(a+b \arcsin(c x))^2}{2 d^2\left(-c^2 x^2+1\right)}-\frac{2(a+b \arcsin(c x))^2 \operatorname{arctanh}\left(\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{d^2}-\frac{b^2 \ln\left(-c^2 x^2+1\right)}{2 d^2}$$

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

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

Result(type 4, 828 leaves):

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

$$+\frac{2 a b \arcsin(c x) \ln\left(1-I c x-\sqrt{-c^2 x^2+1}\right)}{d^2}+\frac{2 a b \arcsin(c x) \ln\left(1+I c x+\sqrt{-c^2 x^2+1}\right)}{d^2}+\frac{I b^2 \arcsin(c x)}{d^2\left(c^2 x^2-1\right)}$$

$$+\frac{I b^2 \arcsin(c x) \operatorname{polylog}\left(2,-\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{d^2}-\frac{2 I b^2 \arcsin(c x) \operatorname{polylog}\left(2, I c x+\sqrt{-c^2 x^2+1}\right)}{d^2}$$

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

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

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

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

$$- \frac{b^2 \arcsin(c x)^2}{2 d^2 (c^2 x^2 - 1)} + \frac{b^2 \arcsin(c x)^2 \ln\left(1 - I c x - \sqrt{-c^2 x^2 + 1}\right)}{d^2} + \frac{b^2 \arcsin(c x)^2 \ln\left(1 + I c x + \sqrt{-c^2 x^2 + 1}\right)}{d^2}$$

$$- \frac{b^2 \arcsin(c x)^2 \ln\left(1 + \left(I c x + \sqrt{-c^2 x^2 + 1}\right)^2\right)}{d^2}$$

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

$$\int \frac{(a + b \arcsin(c x))^2}{x^4 (-c^2 d x^2 + d)^2}\, dx$$

Optimal(type 4, 472 leaves, 32 steps):

$$- \frac{b^2 c^2}{3 d^2 x} - \frac{(a + b \arcsin(c x))^2}{3 d^2 x^3 (-c^2 x^2 + 1)} - \frac{5 c^2 (a + b \arcsin(c x))^2}{3 d^2 x (-c^2 x^2 + 1)} + \frac{5 c^4 x (a + b \arcsin(c x))^2}{2 d^2 (-c^2 x^2 + 1)} - \frac{5 I c^3 (a + b \arcsin(c x))^2 \arctan\left(I c x + \sqrt{-c^2 x^2 + 1}\right)}{d^2}$$

$$- \frac{26 b c^3 (a + b \arcsin(c x)) \operatorname{arctanh}\left(I c x + \sqrt{-c^2 x^2 + 1}\right)}{3 d^2} + \frac{b^2 c^3 \operatorname{arctanh}(c x)}{d^2} + \frac{13 I b^2 c^3 \operatorname{polylog}\left(2, -I c x - \sqrt{-c^2 x^2 + 1}\right)}{3 d^2}$$

$$+ \frac{5 I b c^3 (a + b \arcsin(c x)) \operatorname{polylog}\left(2, -I \left(I c x + \sqrt{-c^2 x^2 + 1}\right)\right)}{d^2} - \frac{5 I b c^3 (a + b \arcsin(c x)) \operatorname{polylog}\left(2, I \left(I c x + \sqrt{-c^2 x^2 + 1}\right)\right)}{d^2}$$

$$- \frac{13 I b^2 c^3 \operatorname{polylog}\left(2, I c x + \sqrt{-c^2 x^2 + 1}\right)}{3 d^2} - \frac{5 b^2 c^3 \operatorname{polylog}\left(3, -I \left(I c x + \sqrt{-c^2 x^2 + 1}\right)\right)}{d^2} + \frac{5 b^2 c^3 \operatorname{polylog}\left(3, I \left(I c x + \sqrt{-c^2 x^2 + 1}\right)\right)}{d^2}$$

$$- \frac{2 b c^3 (a + b \arcsin(c x))}{3 d^2 \sqrt{-c^2 x^2 + 1}} - \frac{b c (a + b \arcsin(c x))}{3 d^2 x^2 \sqrt{-c^2 x^2 + 1}}$$

Result(type 4, 1018 leaves):

$$- \frac{13 c^3 b^2 \arcsin(c x) \ln\left(1 + I c x + \sqrt{-c^2 x^2 + 1}\right)}{3 d^2} + \frac{5 c^3 b^2 \arcsin(c x)^2 \ln\left(1 - I \left(I c x + \sqrt{-c^2 x^2 + 1}\right)\right)}{2 d^2}$$

$$- \frac{5 c^3 b^2 \arcsin(c x)^2 \ln\left(1 + I \left(I c x + \sqrt{-c^2 x^2 + 1}\right)\right)}{2 d^2} - \frac{13 c^3 a b \ln\left(1 + I c x + \sqrt{-c^2 x^2 + 1}\right)}{3 d^2} + \frac{b^2 \arcsin(c x)^2}{3 d^2 x^3 (c^2 x^2 - 1)}$$

$$+ \frac{13 I c^3 b^2 \operatorname{dilog}\left(1 + I c x + \sqrt{-c^2 x^2 + 1}\right)}{3 d^2} + \frac{13 I c^3 b^2 \operatorname{dilog}\left(I c x + \sqrt{-c^2 x^2 + 1}\right)}{3 d^2} - \frac{2 I c^3 b^2 \arctan\left(I c x + \sqrt{-c^2 x^2 + 1}\right)}{d^2} + \frac{c^2 b^2}{3 d^2 x (c^2 x^2 - 1)}$$

$$- \frac{c^4 b^2 x}{3 d^2 (c^2 x^2 - 1)} + \frac{13 c^3 a b \ln\left(I c x + \sqrt{-c^2 x^2 + 1} - 1\right)}{3 d^2} - \frac{a^2}{3 d^2 x^3} + \frac{2 c^3 b^2 \arcsin(c x) \sqrt{-c^2 x^2 + 1}}{3 d^2 (c^2 x^2 - 1)} + \frac{2 c^3 a b \sqrt{-c^2 x^2 + 1}}{3 d^2 (c^2 x^2 - 1)}$$

$$+\frac{5 c^3 a b \arcsin(c x) \ln\left(1-I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{d^2}-\frac{5 c^3 a b \arcsin(c x) \ln\left(1+I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{d^2}-\frac{5 c^4 b^2 x \arcsin(c x)^2}{2 d^2 (c^2 x^2-1)}$$

$$+\frac{5 c^2 b^2 \arcsin(c x)^2}{3 d^2 x (c^2 x^2-1)}+\frac{2 a b \arcsin(c x)}{3 d^2 x^3 (c^2 x^2-1)}-\frac{5 I c^3 b^2 \arcsin(c x) \operatorname{polylog}\left(2, I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{d^2}$$

$$+\frac{5 I c^3 b^2 \arcsin(c x) \operatorname{polylog}\left(2,-I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{d^2}-\frac{5 I c^3 a b \operatorname{dilog}\left(1-I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{d^2}$$

$$+\frac{5 I c^3 a b \operatorname{dilog}\left(1+I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{d^2}-\frac{c^3 a^2}{4 d^2 (c x+1)}-\frac{c^3 a^2}{4 d^2 (c x-1)}-\frac{2 c^2 a^2}{d^2 x}+\frac{5 c^3 a^2 \ln(c x+1)}{4 d^2}-\frac{5 c^3 a^2 \ln(c x-1)}{4 d^2}$$

$$-\frac{5 b^2 c^3 \operatorname{polylog}\left(3,-I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{d^2}+\frac{5 b^2 c^3 \operatorname{polylog}\left(3, I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{d^2}+\frac{c b^2 \sqrt{-c^2 x^2+1} \arcsin(c x)}{3 d^2 x^2 (c^2 x^2-1)}-\frac{5 c^4 a b x \arcsin(c x)}{d^2 (c^2 x^2-1)}$$

$$+\frac{10 c^2 a b \arcsin(c x)}{3 d^2 x (c^2 x^2-1)}+\frac{c a b \sqrt{-c^2 x^2+1}}{3 d^2 x^2 (c^2 x^2-1)}$$

Problem 53: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 339 leaves, 15 steps):

$$\frac{b^2 x}{12 d^3 (-c^2 x^2+1)}-\frac{b (a+b \arcsin(c x))}{6 c d^3 (-c^2 x^2+1)^{3/2}}+\frac{x (a+b \arcsin(c x))^2}{4 d^3 (-c^2 x^2+1)^2}+\frac{3 x (a+b \arcsin(c x))^2}{8 d^3 (-c^2 x^2+1)}-\frac{3 I (a+b \arcsin(c x))^2 \arctan\left(I c x+\sqrt{-c^2 x^2+1}\right)}{4 c d^3}$$

$$+\frac{5 b^2 \operatorname{arctanh}(c x)}{6 c d^3}+\frac{3 I b (a+b \arcsin(c x)) \operatorname{polylog}\left(2,-I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 c d^3}-\frac{3 I b (a+b \arcsin(c x)) \operatorname{polylog}\left(2, I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 c d^3}$$

$$-\frac{3 b^2 \operatorname{polylog}\left(3,-I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 c d^3}+\frac{3 b^2 \operatorname{polylog}\left(3, I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 c d^3}-\frac{3 b (a+b \arcsin(c x))}{4 c d^3 \sqrt{-c^2 x^2+1}}$$

Result(type 4, 889 leaves):

$$-\frac{3 c^2 b^2 \arcsin(c x)^2 x^3}{8 d^3 (c^4 x^4-2 c^2 x^2+1)}-\frac{11 b^2 \arcsin(c x) \sqrt{-c^2 x^2+1}}{12 c d^3 (c^4 x^4-2 c^2 x^2+1)}-\frac{11 a b \sqrt{-c^2 x^2+1}}{12 c d^3 (c^4 x^4-2 c^2 x^2+1)}-\frac{3 a b \arcsin(c x) \ln\left(1+I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 c d^3}$$

$$+\frac{3 a b \arcsin(c x) \ln\left(1-I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 c d^3}+\frac{5 a b \arcsin(c x) x}{4 d^3 (c^4 x^4-2 c^2 x^2+1)}+\frac{3 I a b \operatorname{dilog}\left(1+I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 c d^3}$$

$$-\frac{3 I a b \operatorname{dilog}\left(1-I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 c d^3}-\frac{3 I b^2 \arcsin(c x) \operatorname{polylog}\left(2, I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 c d^3}$$

$$+\frac{3 I b^2 \arcsin(c x)\, \mathrm{polylog}\left(2, -I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 c d^3}-\frac{3 b^2 \mathrm{polylog}\left(3, -I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 c d^3}+\frac{3 b^2 \mathrm{polylog}\left(3, I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 c d^3}$$
$$-\frac{c^2 b^2 x^3}{12 d^3 \left(c^4 x^4-2 c^2 x^2+1\right)}+\frac{5 b^2 \arcsin(c x)^2 x}{8 d^3 \left(c^4 x^4-2 c^2 x^2+1\right)}+\frac{3 b^2 \arcsin(c x)^2 \ln\left(1-I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{8 c d^3}$$
$$-\frac{3 b^2 \arcsin(c x)^2 \ln\left(1+I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{8 c d^3}-\frac{5 I b^2 \arctan\left(I c x+\sqrt{-c^2 x^2+1}\right)}{3 c d^3}+\frac{b^2 x}{12 d^3 \left(c^4 x^4-2 c^2 x^2+1\right)}-\frac{3 a^2}{16 c d^3 (c x+1)}$$
$$+\frac{a^2}{16 c d^3 (c x-1)^2}-\frac{3 a^2}{16 c d^3 (c x-1)}-\frac{a^2}{16 c d^3 (c x+1)^2}+\frac{3 a^2 \ln(c x+1)}{16 c d^3}-\frac{3 a^2 \ln(c x-1)}{16 c d^3}-\frac{3 c^2 a b \arcsin(c x) x^3}{4 d^3 \left(c^4 x^4-2 c^2 x^2+1\right)}$$
$$+\frac{3 c a b \sqrt{-c^2 x^2+1}\, x^2}{4 d^3 \left(c^4 x^4-2 c^2 x^2+1\right)}+\frac{3 c b^2 \sqrt{-c^2 x^2+1}\, \arcsin(c x) x^2}{4 d^3 \left(c^4 x^4-2 c^2 x^2+1\right)}$$

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Problem 54: Result more than twice size of optimal antiderivative.
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$$\int \frac{(a+b \arcsin(c x))^2}{x^2 \left(-c^2 d x^2+d\right)^3}\, dx$$

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Optimal(type 4, 458 leaves, 27 steps):
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$$\frac{b^2 c^2 x}{12 d^3 \left(-c^2 x^2+1\right)}-\frac{b c (a+b \arcsin(c x))}{6 d^3 \left(-c^2 x^2+1\right)^{3/2}}-\frac{(a+b \arcsin(c x))^2}{d^3 x \left(-c^2 x^2+1\right)^2}+\frac{5 c^2 x (a+b \arcsin(c x))^2}{4 d^3 \left(-c^2 x^2+1\right)^2}+\frac{15 c^2 x (a+b \arcsin(c x))^2}{8 d^3 \left(-c^2 x^2+1\right)}$$
$$-\frac{15 I c (a+b \arcsin(c x))^2 \arctan\left(I c x+\sqrt{-c^2 x^2+1}\right)}{4 d^3}-\frac{4 b c (a+b \arcsin(c x))\, \mathrm{arctanh}\left(I c x+\sqrt{-c^2 x^2+1}\right)}{d^3}+\frac{11 b^2 c\, \mathrm{arctanh}(c x)}{6 d^3}$$
$$+\frac{2 I b^2 c\, \mathrm{polylog}\left(2, -I c x-\sqrt{-c^2 x^2+1}\right)}{d^3}+\frac{15 I b c (a+b \arcsin(c x))\, \mathrm{polylog}\left(2, -I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 d^3}$$
$$-\frac{15 I b c (a+b \arcsin(c x))\, \mathrm{polylog}\left(2, I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 d^3}-\frac{2 I b^2 c\, \mathrm{polylog}\left(2, I c x+\sqrt{-c^2 x^2+1}\right)}{d^3}$$
$$-\frac{15 b^2 c\, \mathrm{polylog}\left(3, -I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 d^3}+\frac{15 b^2 c\, \mathrm{polylog}\left(3, I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 d^3}-\frac{7 b c (a+b \arcsin(c x))}{4 d^3 \sqrt{-c^2 x^2+1}}$$

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Result(type 4, 1092 leaves):
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$$-\frac{15 a b \arcsin(c x) c^4 x^3}{4 d^3 \left(c^4 x^4-2 c^2 x^2+1\right)}+\frac{7 a b \sqrt{-c^2 x^2+1}\, c^3 x^2}{4 d^3 \left(c^4 x^4-2 c^2 x^2+1\right)}+\frac{25 a b \arcsin(c x) c^2 x}{4 d^3 \left(c^4 x^4-2 c^2 x^2+1\right)}+\frac{7 b^2 \sqrt{-c^2 x^2+1}\, \arcsin(c x) c^3 x^2}{4 d^3 \left(c^4 x^4-2 c^2 x^2+1\right)}-\frac{a^2}{d^3 x}$$
$$-\frac{15 b^2 c\, \mathrm{polylog}\left(3, -I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 d^3}+\frac{15 b^2 c\, \mathrm{polylog}\left(3, I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{4 d^3}-\frac{7 c a^2}{16 d^3 (c x+1)}+\frac{c a^2}{16 d^3 (c x-1)^2}$$
$$-\frac{7 c a^2}{16 d^3 (c x-1)}-\frac{c a^2}{16 d^3 (c x+1)^2}+\frac{15 c a^2 \ln(c x+1)}{16 d^3}-\frac{15 c a^2 \ln(c x-1)}{16 d^3}-\frac{b^2 c^4 x^3}{12 d^3 \left(c^4 x^4-2 c^2 x^2+1\right)}+\frac{b^2 c^2 x}{12 d^3 \left(c^4 x^4-2 c^2 x^2+1\right)}$$

$$- \frac{2\,c\,a\,b \ln\left(1 + \mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)}{d^3} + \frac{2\,c\,a\,b \ln\left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1} - 1\right)}{d^3} - \frac{2\,c\,b^2 \arcsin(c\,x) \ln\left(1 + \mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)}{d^3}$$

$$+ \frac{15\,c\,b^2 \arcsin(c\,x)^2 \ln\left(1 - \mathrm{I}\left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)\right)}{8\,d^3} - \frac{15\,c\,b^2 \arcsin(c\,x)^2 \ln\left(1 + \mathrm{I}\left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)\right)}{8\,d^3} - \frac{b^2 \arcsin(c\,x)^2}{d^3\,(c^4 x^4 - 2\,c^2 x^2 + 1)\,x}$$

$$+ \frac{2\,\mathrm{I}\,c\,b^2 \operatorname{dilog}\left(1 + \mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)}{d^3} + \frac{2\,\mathrm{I}\,c\,b^2 \operatorname{dilog}\left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)}{d^3} - \frac{11\,\mathrm{I}\,c\,b^2 \arctan\left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)}{3\,d^3} - \frac{15\,b^2 \arcsin(c\,x)^2 c^4 x^3}{8\,d^3\,(c^4 x^4 - 2\,c^2 x^2 + 1)}$$

$$+ \frac{25\,b^2 \arcsin(c\,x)^2 c^2 x}{8\,d^3\,(c^4 x^4 - 2\,c^2 x^2 + 1)} - \frac{23\,c\,b^2 \arcsin(c\,x)\sqrt{-c^2 x^2 + 1}}{12\,d^3\,(c^4 x^4 - 2\,c^2 x^2 + 1)} - \frac{23\,c\,a\,b\sqrt{-c^2 x^2 + 1}}{12\,d^3\,(c^4 x^4 - 2\,c^2 x^2 + 1)} - \frac{15\,c\,a\,b \arcsin(c\,x) \ln\left(1 + \mathrm{I}\left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)\right)}{4\,d^3}$$

$$+ \frac{15\,c\,a\,b \arcsin(c\,x) \ln\left(1 - \mathrm{I}\left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)\right)}{4\,d^3} - \frac{2\,a\,b \arcsin(c\,x)}{d^3\,(c^4 x^4 - 2\,c^2 x^2 + 1)\,x} + \frac{15\,\mathrm{I}\,c\,a\,b \operatorname{dilog}\left(1 + \mathrm{I}\left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)\right)}{4\,d^3}$$

$$- \frac{15\,\mathrm{I}\,c\,a\,b \operatorname{dilog}\left(1 - \mathrm{I}\left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)\right)}{4\,d^3} - \frac{15\,\mathrm{I}\,c\,b^2 \arcsin(c\,x) \operatorname{polylog}\left(2, \mathrm{I}\left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)\right)}{4\,d^3}$$

$$+ \frac{15\,\mathrm{I}\,c\,b^2 \arcsin(c\,x) \operatorname{polylog}\left(2, -\mathrm{I}\left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)\right)}{4\,d^3}$$

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

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

Optimal(type 4, 427 leaves, 23 steps):

$$\frac{b^2 c^2}{12\,d^3\,(-c^2 x^2 + 1)} - \frac{b\,c\,(a + b \arcsin(c\,x))}{d^3\,x\,(-c^2 x^2 + 1)^{3/2}} + \frac{5\,b\,c^3 x\,(a + b \arcsin(c\,x))}{6\,d^3\,(-c^2 x^2 + 1)^{3/2}} + \frac{3\,c^2\,(a + b \arcsin(c\,x))^2}{4\,d^3\,(-c^2 x^2 + 1)^2} - \frac{(a + b \arcsin(c\,x))^2}{2\,d^3 x^2\,(-c^2 x^2 + 1)^2} + \frac{3\,c^2\,(a + b \arcsin(c\,x))^2}{2\,d^3\,(-c^2 x^2 + 1)}$$

$$- \frac{6\,c^2\,(a + b \arcsin(c\,x))^2 \operatorname{arctanh}\left(\left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)^2\right)}{d^3} + \frac{b^2 c^2 \ln(x)}{d^3} - \frac{7\,b^2 c^2 \ln(-c^2 x^2 + 1)}{6\,d^3}$$

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

$$- \frac{3\,b^2 c^2 \operatorname{polylog}\left(3, -\left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)^2\right)}{2\,d^3} + \frac{3\,b^2 c^2 \operatorname{polylog}\left(3, \left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)^2\right)}{2\,d^3} - \frac{4\,b\,c^3 x\,(a + b \arcsin(c\,x))}{3\,d^3 \sqrt{-c^2 x^2 + 1}}$$

Result(type 4, 1546 leaves):

$$- \frac{3\,b^2 c^2 \operatorname{polylog}\left(3, -\left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)^2\right)}{2\,d^3} - \frac{7\,c^2 b^2 \ln\left(1 + \left(\mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)^2\right)}{3\,d^3} + \frac{6\,c^2 b^2 \operatorname{polylog}\left(3, \mathrm{I}\,c\,x + \sqrt{-c^2 x^2 + 1}\right)}{d^3}$$

$$+\frac{6 c^2 b^2 \operatorname{polylog}\left(3, -I c x-\sqrt{-c^2 x^2+1}\right)}{d^3}+\frac{3 c^2 a^2 \ln(c x)}{d^3}+\frac{c^2 b^2 \ln\left(1+I c x+\sqrt{-c^2 x^2+1}\right)}{d^3}+\frac{8 c^2 b^2 \ln\left(I c x+\sqrt{-c^2 x^2+1}\right)}{3 d^3}+\frac{9 c^2 a^2}{16 d^3 (c x+1)}$$

$$+\frac{c^2 a^2}{16 d^3 (c x-1)^2}-\frac{9 c^2 a^2}{16 d^3 (c x-1)}+\frac{c^2 a^2}{16 d^3 (c x+1)^2}+\frac{c^2 b^2}{12 d^3 (c^4 x^4-2 c^2 x^2+1)}-\frac{3 c^2 a^2 \ln(c x+1)}{2 d^3}-\frac{3 c^2 a^2 \ln(c x-1)}{2 d^3}$$

$$+\frac{c^2 b^2 \ln\left(I c x+\sqrt{-c^2 x^2+1}-1\right)}{d^3}+\frac{9 c^2 b^2 \arcsin(c x)^2}{4 d^3 (c^4 x^4-2 c^2 x^2+1)}+\frac{3 c^2 b^2 \arcsin(c x)^2 \ln\left(1-I c x-\sqrt{-c^2 x^2+1}\right)}{d^3}$$

$$+\frac{3 c^2 b^2 \arcsin(c x)^2 \ln\left(1+I c x+\sqrt{-c^2 x^2+1}\right)}{d^3}-\frac{3 c^2 b^2 \arcsin(c x)^2 \ln\left(1+\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{d^3}-\frac{b^2 \arcsin(c x)^2}{2 d^3 (c^4 x^4-2 c^2 x^2+1) x^2}$$

$$-\frac{a b \arcsin(c x)}{d^3 (c^4 x^4-2 c^2 x^2+1) x^2}-\frac{3 c^4 b^2 x^2 \arcsin(c x)^2}{2 d^3 (c^4 x^4-2 c^2 x^2+1)}+\frac{9 c^2 a b \arcsin(c x)}{2 d^3 (c^4 x^4-2 c^2 x^2+1)}+\frac{6 c^2 a b \arcsin(c x) \ln\left(1-I c x-\sqrt{-c^2 x^2+1}\right)}{d^3}$$

$$+\frac{6 c^2 a b \arcsin(c x) \ln\left(1+I c x+\sqrt{-c^2 x^2+1}\right)}{d^3}-\frac{6 c^2 a b \arcsin(c x) \ln\left(1+\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{d^3}-\frac{4 I c^2 a b}{3 d^3 (c^4 x^4-2 c^2 x^2+1)}$$

$$-\frac{6 I c^2 a b \operatorname{polylog}\left(2, I c x+\sqrt{-c^2 x^2+1}\right)}{d^3}-\frac{6 I c^2 a b \operatorname{polylog}\left(2, -I c x-\sqrt{-c^2 x^2+1}\right)}{d^3}+\frac{3 I c^2 a b \operatorname{polylog}\left(2, -\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{d^3}$$

$$-\frac{4 I c^2 b^2 \arcsin(c x)}{3 d^3 (c^4 x^4-2 c^2 x^2+1)}-\frac{6 I c^2 b^2 \arcsin(c x) \operatorname{polylog}\left(2, I c x+\sqrt{-c^2 x^2+1}\right)}{d^3}-\frac{6 I c^2 b^2 \arcsin(c x) \operatorname{polylog}\left(2, -I c x-\sqrt{-c^2 x^2+1}\right)}{d^3}$$

$$+\frac{3 I c^2 b^2 \arcsin(c x) \operatorname{polylog}\left(2, -\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{d^3}-\frac{c^4 b^2 x^2}{12 d^3 (c^4 x^4-2 c^2 x^2+1)}+\frac{4 c^5 a b x^3 \sqrt{-c^2 x^2+1}}{3 d^3 (c^4 x^4-2 c^2 x^2+1)}-\frac{3 c^4 a b x^2 \arcsin(c x)}{d^3 (c^4 x^4-2 c^2 x^2+1)}$$

$$-\frac{c^3 a b x \sqrt{-c^2 x^2+1}}{2 d^3 (c^4 x^4-2 c^2 x^2+1)}-\frac{c a b \sqrt{-c^2 x^2+1}}{d^3 (c^4 x^4-2 c^2 x^2+1) x}+\frac{4 c^5 b^2 x^3 \sqrt{-c^2 x^2+1} \arcsin(c x)}{3 d^3 (c^4 x^4-2 c^2 x^2+1)}-\frac{c^3 b^2 x \arcsin(c x) \sqrt{-c^2 x^2+1}}{2 d^3 (c^4 x^4-2 c^2 x^2+1)}$$

$$-\frac{c b^2 \sqrt{-c^2 x^2+1} \arcsin(c x)}{d^3 (c^4 x^4-2 c^2 x^2+1) x}-\frac{4 I c^6 a b x^4}{3 d^3 (c^4 x^4-2 c^2 x^2+1)}+\frac{8 I c^4 a b x^2}{3 d^3 (c^4 x^4-2 c^2 x^2+1)}-\frac{4 I c^6 b^2 x^4 \arcsin(c x)}{3 d^3 (c^4 x^4-2 c^2 x^2+1)}+\frac{8 I c^4 b^2 x^2 \arcsin(c x)}{3 d^3 (c^4 x^4-2 c^2 x^2+1)}$$

$$-\frac{a^2}{2 d^3 x^2}$$

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

$$\int \frac{\sqrt{-c^2 d x^2+d}\, (a+b \arcsin(c x))^2}{x^4}\, dx$$

Optimal(type 4, 294 leaves, 9 steps):

$$-\frac{(-c^2 d x^2+d)^{3/2} (a+b \arcsin(c x))^2}{3 d x^3}-\frac{b^2 c^2 \sqrt{-c^2 d x^2+d}}{3 x}-\frac{b^2 c^3 \arcsin(c x) \sqrt{-c^2 d x^2+d}}{3 \sqrt{-c^2 x^2+1}}+\frac{I c^3 (a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{3 \sqrt{-c^2 x^2+1}}$$

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

$$- \frac{b c (a+b \arcsin(c x)) \sqrt{-c^2 x^2+1} \sqrt{-c^2 d x^2+d}}{3 x^2}$$

Result(type ?, 3016 leaves): Display of huge result suppressed!

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

$$\int x \left(-c^2 d x^2+d\right)^{3/2} (a+b \arcsin(c x))^2 \, dx$$

Optimal(type 3, 245 leaves, 6 steps):

$$-\frac{\left(-c^2 d x^2+d\right)^{5/2} (a+b \arcsin(c x))^2}{5 c^2 d} + \frac{16 b^2 d \sqrt{-c^2 d x^2+d}}{75 c^2} + \frac{8 b^2 d \left(-c^2 x^2+1\right) \sqrt{-c^2 d x^2+d}}{225 c^2} + \frac{2 b^2 d \left(-c^2 x^2+1\right)^2 \sqrt{-c^2 d x^2+d}}{125 c^2}$$

$$+ \frac{2 b d x (a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{5 c \sqrt{-c^2 x^2+1}} - \frac{4 b c d x^3 (a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{15 \sqrt{-c^2 x^2+1}} + \frac{2 b c^3 d x^5 (a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{25 \sqrt{-c^2 x^2+1}}$$

Result(type 3, 1223 leaves):

$$-\frac{a^2 \left(-c^2 d x^2+d\right)^{5/2}}{5 c^2 d} + b^2 \Bigg(-\frac{1}{4000 c^2 \left(c^2 x^2-1\right)} \Big(\sqrt{-d \left(c^2 x^2-1\right)} \Big(16 x^6 c^6 - 28 c^4 x^4 - 16 I \sqrt{-c^2 x^2+1}\, x^5 c^5 + 13 c^2 x^2 + 20 I \sqrt{-c^2 x^2+1}\, x^3 c^3$$

$$- 5 I \sqrt{-c^2 x^2+1}\, x c - 1\Big) \left(10 I \arcsin(c x) + 25 \arcsin(c x)^2 - 2\right) d\Big)$$

$$+ \frac{\sqrt{-d \left(c^2 x^2-1\right)} \left(4 c^4 x^4 - 5 c^2 x^2 - 4 I \sqrt{-c^2 x^2+1}\, x^3 c^3 + 3 I \sqrt{-c^2 x^2+1}\, x c + 1\right) \left(6 I \arcsin(c x) + 9 \arcsin(c x)^2 - 2\right) d}{288 c^2 \left(c^2 x^2-1\right)}$$

$$- \frac{\sqrt{-d \left(c^2 x^2-1\right)} \left(c^2 x^2 - I c x \sqrt{-c^2 x^2+1} - 1\right) \left(2 I \arcsin(c x) + \arcsin(c x)^2 - 2\right) d}{16 c^2 \left(c^2 x^2-1\right)}$$

$$- \frac{\sqrt{-d \left(c^2 x^2-1\right)} \left(I \sqrt{-c^2 x^2+1}\, x c + c^2 x^2 - 1\right) \left(-2 I \arcsin(c x) + \arcsin(c x)^2 - 2\right) d}{16 c^2 \left(c^2 x^2-1\right)}$$

$$+ \frac{\sqrt{-d \left(c^2 x^2-1\right)} \left(4 I \sqrt{-c^2 x^2+1}\, x^3 c^3 + 4 c^4 x^4 - 3 I \sqrt{-c^2 x^2+1}\, x c - 5 c^2 x^2 + 1\right) \left(-6 I \arcsin(c x) + 9 \arcsin(c x)^2 - 2\right) d}{288 c^2 \left(c^2 x^2-1\right)}$$

$$- \frac{1}{4000 c^2 \left(c^2 x^2-1\right)} \Big(\sqrt{-d \left(c^2 x^2-1\right)} \Big(16 I \sqrt{-c^2 x^2+1}\, x^5 c^5 + 16 x^6 c^6 - 20 I \sqrt{-c^2 x^2+1}\, x^3 c^3 - 28 c^4 x^4 + 5 I \sqrt{-c^2 x^2+1}\, x c + 13 c^2 x^2 - 1\Big) \Big($$

$$-10 I \arcsin(c x) + 25 \arcsin(c x)^2 - 2\Big) d\Big) \Bigg) + 2 a b \Bigg($$

$$- \frac{\sqrt{-d \left(c^2 x^2-1\right)} \left(16 x^6 c^6 - 28 c^4 x^4 - 16 I \sqrt{-c^2 x^2+1}\, x^5 c^5 + 13 c^2 x^2 + 20 I \sqrt{-c^2 x^2+1}\, x^3 c^3 - 5 I \sqrt{-c^2 x^2+1}\, x c - 1\right) (I + 5 \arcsin(c x)) d}{800 \left(c^2 x^2-1\right) c^2}$$

$$+\frac{\sqrt{-d\left(c^2x^2-1\right)}\left(4c^4x^4-5c^2x^2-4\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3+3\,\mathrm{I}\sqrt{-c^2x^2+1}\,xc+1\right)\left(\mathrm{I}+3\arcsin(cx)\right)d}{96\left(c^2x^2-1\right)c^2}$$

$$-\frac{\sqrt{-d\left(c^2x^2-1\right)}\left(c^2x^2-\mathrm{I}\,cx\sqrt{-c^2x^2+1}-1\right)\left(\arcsin(cx)+\mathrm{I}\right)d}{16\left(c^2x^2-1\right)c^2}-\frac{\sqrt{-d\left(c^2x^2-1\right)}\left(\mathrm{I}\sqrt{-c^2x^2+1}\,xc+c^2x^2-1\right)\left(\arcsin(cx)-\mathrm{I}\right)d}{16\left(c^2x^2-1\right)c^2}$$

$$+\frac{\sqrt{-d\left(c^2x^2-1\right)}\left(4\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3+4c^4x^4-3\,\mathrm{I}\sqrt{-c^2x^2+1}\,xc-5c^2x^2+1\right)\left(-\mathrm{I}+3\arcsin(cx)\right)d}{96\left(c^2x^2-1\right)c^2}$$

$$-\left.\frac{\sqrt{-d\left(c^2x^2-1\right)}\left(16\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^5c^5+16x^6c^6-20\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3-28c^4x^4+5\,\mathrm{I}\sqrt{-c^2x^2+1}\,xc+13c^2x^2-1\right)\left(-\mathrm{I}+5\arcsin(cx)\right)d}{800\left(c^2x^2-1\right)c^2}\right)$$

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Problem 58: Result more than twice size of optimal antiderivative.
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$$\int\left(-c^2dx^2+d\right)^{3/2}\left(a+b\arcsin(cx)\right)^2\,dx$$

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Optimal(type 3, 265 leaves, 10 steps):
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$$\frac{x\left(-c^2dx^2+d\right)^{3/2}\left(a+b\arcsin(cx)\right)^2}{4}-\frac{17b^2dx\sqrt{-c^2dx^2+d}}{64}+\frac{b^2c^2dx^3\sqrt{-c^2dx^2+d}}{32}+\frac{3dx\left(a+b\arcsin(cx)\right)^2\sqrt{-c^2dx^2+d}}{8}$$

$$+\frac{17b^2d\arcsin(cx)\sqrt{-c^2dx^2+d}}{64c\sqrt{-c^2x^2+1}}-\frac{5bcdx^2\left(a+b\arcsin(cx)\right)\sqrt{-c^2dx^2+d}}{8\sqrt{-c^2x^2+1}}+\frac{bc^3dx^4\left(a+b\arcsin(cx)\right)\sqrt{-c^2dx^2+d}}{8\sqrt{-c^2x^2+1}}$$

$$+\frac{d\left(a+b\arcsin(cx)\right)^3\sqrt{-c^2dx^2+d}}{8bc\sqrt{-c^2x^2+1}}$$

```
Result(type 3, 819 leaves):
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$$\frac{x\left(-c^2dx^2+d\right)^{3/2}a^2}{4}+\frac{3a^2dx\sqrt{-c^2dx^2+d}}{8}+\frac{3a^2d^2\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2dx^2+d}}\right)}{8\sqrt{c^2d}}+\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,dc^4x^5}{32\left(c^2x^2-1\right)}-\frac{19b^2\sqrt{-d\left(c^2x^2-1\right)}\,dc^2x^3}{64\left(c^2x^2-1\right)}$$

$$+\frac{17b^2\sqrt{-d\left(c^2x^2-1\right)}\,dx}{64\left(c^2x^2-1\right)}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1}\arcsin(cx)^3d}{8c\left(c^2x^2-1\right)}-\frac{17b^2\sqrt{-d\left(c^2x^2-1\right)}\,d\arcsin(cx)\sqrt{-c^2x^2+1}}{64c\left(c^2x^2-1\right)}$$

$$+\frac{5b^2\sqrt{-d\left(c^2x^2-1\right)}\,dc\arcsin(cx)\sqrt{-c^2x^2+1}\,x^2}{8\left(c^2x^2-1\right)}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,dc^3\arcsin(cx)\sqrt{-c^2x^2+1}\,x^4}{8\left(c^2x^2-1\right)}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,dc^4\arcsin(cx)^2x^5}{4\left(c^2x^2-1\right)}$$

$$+\frac{7b^2\sqrt{-d\left(c^2x^2-1\right)}\,dc^2\arcsin(cx)^2x^3}{8\left(c^2x^2-1\right)}-\frac{5b^2\sqrt{-d\left(c^2x^2-1\right)}\,d\arcsin(cx)^2x}{8\left(c^2x^2-1\right)}-\frac{3ab\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1}\arcsin(cx)^2d}{8c\left(c^2x^2-1\right)}$$

$$-\frac{ab\sqrt{-d\left(c^2x^2-1\right)}\,dc^4\arcsin(cx)x^5}{2\left(c^2x^2-1\right)}+\frac{7ab\sqrt{-d\left(c^2x^2-1\right)}\,dc^2\arcsin(cx)x^3}{4\left(c^2x^2-1\right)}-\frac{17ab\sqrt{-d\left(c^2x^2-1\right)}\,d\sqrt{-c^2x^2+1}}{64c\left(c^2x^2-1\right)}$$

$$-\frac{5 a b \sqrt{-d (c^2 x^2-1)}\, d \arcsin(c x)\, x}{4 (c^2 x^2-1)}-\frac{a b \sqrt{-d (c^2 x^2-1)}\, d c^3 \sqrt{-c^2 x^2+1}\, x^4}{8 (c^2 x^2-1)}+\frac{5 a b \sqrt{-d (c^2 x^2-1)}\, d c \sqrt{-c^2 x^2+1}\, x^2}{8 (c^2 x^2-1)}$$

Problem 59: Result more than twice size of optimal antiderivative.

$$\int \frac{(-c^2 d x^2+d)^{3/2} (a+b \arcsin(c x))^2}{x^4}\, dx$$

Optimal(type 4, 372 leaves, 16 steps):

$$-\frac{(-c^2 d x^2+d)^{3/2} (a+b \arcsin(c x))^2}{3 x^3}-\frac{b^2 c^2 d \sqrt{-c^2 d x^2+d}}{3 x}+\frac{c^2 d (a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{x}-\frac{b^2 c^3 d \arcsin(c x) \sqrt{-c^2 d x^2+d}}{3 \sqrt{-c^2 x^2+1}}$$
$$+\frac{4 I c^3 d (a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{3 \sqrt{-c^2 x^2+1}}+\frac{c^3 d (a+b \arcsin(c x))^3 \sqrt{-c^2 d x^2+d}}{3 b \sqrt{-c^2 x^2+1}}$$
$$-\frac{8 b c^3 d (a+b \arcsin(c x)) \ln\left(1-\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right) \sqrt{-c^2 d x^2+d}}{3 \sqrt{-c^2 x^2+1}}+\frac{4 I b^2 c^3 d\, \mathrm{polylog}\left(2, \left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right) \sqrt{-c^2 d x^2+d}}{3 \sqrt{-c^2 x^2+1}}$$
$$-\frac{b c d (a+b \arcsin(c x)) \sqrt{-c^2 x^2+1} \sqrt{-c^2 d x^2+d}}{3 x^2}$$

Result(type ?, 3280 leaves): Display of huge result suppressed!

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

$$\int x (-c^2 d x^2+d)^{5/2} (a+b \arcsin(c x))^2\, dx$$

Optimal(type 3, 338 leaves, 6 steps):

$$-\frac{(-c^2 d x^2+d)^{7/2} (a+b \arcsin(c x))^2}{7 c^2 d}+\frac{32 b^2 d^2 \sqrt{-c^2 d x^2+d}}{245 c^2}+\frac{16 b^2 d^2 (-c^2 x^2+1) \sqrt{-c^2 d x^2+d}}{735 c^2}+\frac{12 b^2 d^2 (-c^2 x^2+1)^2 \sqrt{-c^2 d x^2+d}}{1225 c^2}$$
$$+\frac{2 b^2 d^2 (-c^2 x^2+1)^3 \sqrt{-c^2 d x^2+d}}{343 c^2}+\frac{2 b d^2 x (a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{7 c \sqrt{-c^2 x^2+1}}-\frac{2 b c d^2 x^3 (a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{7 \sqrt{-c^2 x^2+1}}$$
$$+\frac{6 b c^3 d^2 x^5 (a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{35 \sqrt{-c^2 x^2+1}}-\frac{2 b c^5 d^2 x^7 (a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{49 \sqrt{-c^2 x^2+1}}$$

Result(type 3, 1887 leaves):

$$-\frac{a^2 (-c^2 d x^2+d)^{7/2}}{7 c^2 d}+b^2 \left(\frac{1}{43904 c^2 (c^2 x^2-1)} \left(\sqrt{-d (c^2 x^2-1)} \left(64 x^8 c^8-144 x^6 c^6-64 I \sqrt{-c^2 x^2+1}\, x^7 c^7+104 c^4 x^4+112 I \sqrt{-c^2 x^2+1}\, x^5 c^5\right.\right.\right.$$
$$\left.\left.-25 c^2 x^2-56 I \sqrt{-c^2 x^2+1}\, x^3 c^3+7 I \sqrt{-c^2 x^2+1}\, x c+1\right) (14 I \arcsin(c x)+49 \arcsin(c x)^2-2) d^2\right)$$

$$-\frac{1}{3200\,c^2\,(c^2x^2-1)}\Big(\sqrt{-d\,(c^2x^2-1)}\,\Big(16x^6c^6-28c^4x^4-16\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^5c^5+13c^2x^2+20\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3-5\,\mathrm{I}\sqrt{-c^2x^2+1}\,x\,c$$

$$-1\Big)\,(10\,\mathrm{I}\arcsin(cx)+25\arcsin(cx)^2-2)\,d^2\Big)$$

$$+\frac{\sqrt{-d\,(c^2x^2-1)}\,\Big(4c^4x^4-5c^2x^2-4\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3+3\,\mathrm{I}\sqrt{-c^2x^2+1}\,x\,c+1\Big)\,(6\,\mathrm{I}\arcsin(cx)+9\arcsin(cx)^2-2)\,d^2}{384\,c^2\,(c^2x^2-1)}$$

$$-\frac{5\sqrt{-d\,(c^2x^2-1)}\,\Big(c^2x^2-\mathrm{I}\,c\,x\sqrt{-c^2x^2+1}-1\Big)\,(2\,\mathrm{I}\arcsin(cx)+\arcsin(cx)^2-2)\,d^2}{128\,c^2\,(c^2x^2-1)}$$

$$-\frac{5\sqrt{-d\,(c^2x^2-1)}\,\Big(\mathrm{I}\sqrt{-c^2x^2+1}\,x\,c+c^2x^2-1\Big)\,(-2\,\mathrm{I}\arcsin(cx)+\arcsin(cx)^2-2)\,d^2}{128\,c^2\,(c^2x^2-1)}$$

$$+\frac{\sqrt{-d\,(c^2x^2-1)}\,\Big(4\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3+4c^4x^4-3\,\mathrm{I}\sqrt{-c^2x^2+1}\,x\,c-5c^2x^2+1\Big)\,(-6\,\mathrm{I}\arcsin(cx)+9\arcsin(cx)^2-2)\,d^2}{384\,c^2\,(c^2x^2-1)}$$

$$-\frac{1}{3200\,c^2\,(c^2x^2-1)}\Big(\sqrt{-d\,(c^2x^2-1)}\,\Big(16\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^5c^5+16x^6c^6-20\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3-28c^4x^4+5\,\mathrm{I}\sqrt{-c^2x^2+1}\,x\,c+13c^2x^2-1\Big)\,\Big($$

$$-10\,\mathrm{I}\arcsin(cx)+25\arcsin(cx)^2-2)\,d^2\Big)+\frac{1}{43904\,c^2\,(c^2x^2-1)}\Big(\sqrt{-d\,(c^2x^2-1)}\,\Big(64\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^7c^7+64x^8c^8-112\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^5c^5$$

$$-144x^6c^6+56\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3+104c^4x^4-7\,\mathrm{I}\sqrt{-c^2x^2+1}\,x\,c-25c^2x^2+1\Big)\,(-14\,\mathrm{I}\arcsin(cx)+49\arcsin(cx)^2-2)\,d^2\Big)\Bigg)$$

$$+2ab\Bigg(\frac{1}{6272\,c^2\,(c^2x^2-1)}\Big(\sqrt{-d\,(c^2x^2-1)}\,\Big(64x^8c^8-144x^6c^6-64\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^7c^7+104c^4x^4+112\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^5c^5-25c^2x^2$$

$$-56\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3+7\,\mathrm{I}\sqrt{-c^2x^2+1}\,x\,c+1\Big)\,(\mathrm{I}+7\arcsin(cx))\,d^2\Big)$$

$$-\frac{\sqrt{-d\,(c^2x^2-1)}\,\Big(16x^6c^6-28c^4x^4-16\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^5c^5+13c^2x^2+20\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3-5\,\mathrm{I}\sqrt{-c^2x^2+1}\,x\,c-1\Big)\,(\mathrm{I}+5\arcsin(cx))\,d^2}{640\,c^2\,(c^2x^2-1)}$$

$$+\frac{\sqrt{-d\,(c^2x^2-1)}\,\Big(4c^4x^4-5c^2x^2-4\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3+3\,\mathrm{I}\sqrt{-c^2x^2+1}\,x\,c+1\Big)\,(\mathrm{I}+3\arcsin(cx))\,d^2}{128\,c^2\,(c^2x^2-1)}$$

$$-\frac{5\sqrt{-d\,(c^2x^2-1)}\,\Big(c^2x^2-\mathrm{I}\,c\,x\sqrt{-c^2x^2+1}-1\Big)\,(\arcsin(cx)+\mathrm{I})\,d^2}{128\,c^2\,(c^2x^2-1)}-\frac{5\sqrt{-d\,(c^2x^2-1)}\,\Big(\mathrm{I}\sqrt{-c^2x^2+1}\,x\,c+c^2x^2-1\Big)\,(\arcsin(cx)-\mathrm{I})\,d^2}{128\,c^2\,(c^2x^2-1)}$$

$$+\frac{\sqrt{-d\,(c^2x^2-1)}\,\Big(4\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3+4c^4x^4-3\,\mathrm{I}\sqrt{-c^2x^2+1}\,x\,c-5c^2x^2+1\Big)\,(-\mathrm{I}+3\arcsin(cx))\,d^2}{128\,c^2\,(c^2x^2-1)}$$

$$-\frac{\sqrt{-d\,(c^2x^2-1)}\,\Big(16\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^5c^5+16x^6c^6-20\,\mathrm{I}\sqrt{-c^2x^2+1}\,x^3c^3-28c^4x^4+5\,\mathrm{I}\sqrt{-c^2x^2+1}\,x\,c+13c^2x^2-1\Big)\,(-\mathrm{I}+5\arcsin(cx))\,d^2}{640\,c^2\,(c^2x^2-1)}$$

$$+ \frac{1}{6272 c^2 (c^2 x^2 - 1)} \left(\sqrt{-d (c^2 x^2 - 1)} \left(64 I \sqrt{-c^2 x^2 + 1}\, x^7 c^7 + 64 x^8 c^8 - 112 I \sqrt{-c^2 x^2 + 1}\, x^5 c^5 - 144 x^6 c^6 + 56 I \sqrt{-c^2 x^2 + 1}\, x^3 c^3 + 104 c^4 x^4 - 7 I \sqrt{-c^2 x^2 + 1}\, x c - 25 c^2 x^2 + 1\right) (-I + 7 \arcsin(c x)) d^2\right)\Bigg)$$

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

$$\int \frac{(-c^2 d x^2 + d)^{5/2} (a + b \arcsin(c x))^2}{x}\, dx$$

Optimal(type 4, 657 leaves, 23 steps):

$$\frac{d (-c^2 d x^2 + d)^{3/2} (a + b \arcsin(c x))^2}{3} + \frac{(-c^2 d x^2 + d)^{5/2} (a + b \arcsin(c x))^2}{5} - \frac{598 b^2 d^2 \sqrt{-c^2 d x^2 + d}}{225} - \frac{74 b^2 d^2 (-c^2 x^2 + 1) \sqrt{-c^2 d x^2 + d}}{675} - \frac{2 b^2 d^2 (-c^2 x^2 + 1)^2 \sqrt{-c^2 d x^2 + d}}{125} + d^2 (a + b \arcsin(c x))^2 \sqrt{-c^2 d x^2 + d} - \frac{2 a b c d^2 x \sqrt{-c^2 d x^2 + d}}{\sqrt{-c^2 x^2 + 1}} - \frac{2 b^2 c d^2 x \arcsin(c x) \sqrt{-c^2 d x^2 + d}}{\sqrt{-c^2 x^2 + 1}} - \frac{16 b c d^2 x (a + b \arcsin(c x)) \sqrt{-c^2 d x^2 + d}}{15 \sqrt{-c^2 x^2 + 1}} + \frac{22 b c^3 d^2 x^3 (a + b \arcsin(c x)) \sqrt{-c^2 d x^2 + d}}{45 \sqrt{-c^2 x^2 + 1}} - \frac{2 b c^5 d^2 x^5 (a + b \arcsin(c x)) \sqrt{-c^2 d x^2 + d}}{25 \sqrt{-c^2 x^2 + 1}} - \frac{2 d^2 (a + b \arcsin(c x))^2 \operatorname{arctanh}\left(I c x + \sqrt{-c^2 x^2 + 1}\right) \sqrt{-c^2 d x^2 + d}}{\sqrt{-c^2 x^2 + 1}} + \frac{2 I b d^2 (a + b \arcsin(c x)) \operatorname{polylog}\left(2, -I c x - \sqrt{-c^2 x^2 + 1}\right) \sqrt{-c^2 d x^2 + d}}{\sqrt{-c^2 x^2 + 1}} - \frac{2 I b d^2 (a + b \arcsin(c x)) \operatorname{polylog}\left(2, I c x + \sqrt{-c^2 x^2 + 1}\right) \sqrt{-c^2 d x^2 + d}}{\sqrt{-c^2 x^2 + 1}} - \frac{2 b^2 d^2 \operatorname{polylog}\left(3, -I c x - \sqrt{-c^2 x^2 + 1}\right) \sqrt{-c^2 d x^2 + d}}{\sqrt{-c^2 x^2 + 1}} + \frac{2 b^2 d^2 \operatorname{polylog}\left(3, I c x + \sqrt{-c^2 x^2 + 1}\right) \sqrt{-c^2 d x^2 + d}}{\sqrt{-c^2 x^2 + 1}}$$

Result(type 4, 1573 leaves):

$$\frac{2 b^2 \sqrt{-d (c^2 x^2 - 1)}\, d^2 \arcsin(c x) \sqrt{-c^2 x^2 + 1}\, x^5 c^5}{25 (c^2 x^2 - 1)} - \frac{2 I a b \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1}\, d^2 \operatorname{polylog}\left(2, -I c x - \sqrt{-c^2 x^2 + 1}\right)}{c^2 x^2 - 1} + \frac{2 a b \sqrt{-d (c^2 x^2 - 1)}\, d^2 \sqrt{-c^2 x^2 + 1}\, x^5 c^5}{25 (c^2 x^2 - 1)} - \frac{22 a b \sqrt{-d (c^2 x^2 - 1)}\, d^2 \sqrt{-c^2 x^2 + 1}\, x^3 c^3}{45 (c^2 x^2 - 1)} + \frac{46 a b \sqrt{-d (c^2 x^2 - 1)}\, d^2 \sqrt{-c^2 x^2 + 1}\, x c}{15 (c^2 x^2 - 1)} - \frac{2 a b \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1}\, d^2 \arcsin(c x) \ln\left(1 - I c x - \sqrt{-c^2 x^2 + 1}\right)}{c^2 x^2 - 1} + \frac{2 a b \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1}\, d^2 \arcsin(c x) \ln\left(1 + I c x + \sqrt{-c^2 x^2 + 1}\right)}{c^2 x^2 - 1} + \frac{2 a b \sqrt{-d (c^2 x^2 - 1)}\, d^2 \arcsin(c x)\, x^6 c^6}{5 (c^2 x^2 - 1)}$$

$$- \frac{28 a b \sqrt{-d (c^2 x^2 - 1)}\, d^2 \arcsin(c x) x^4 c^4}{15 (c^2 x^2 - 1)} + \frac{68 a b \sqrt{-d (c^2 x^2 - 1)}\, d^2 c^2 x^2 \arcsin(c x)}{15 (c^2 x^2 - 1)}$$

$$+ \frac{2 I a b \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1}\, d^2 \operatorname{polylog}\left(2, I c x + \sqrt{-c^2 x^2 + 1}\right)}{c^2 x^2 - 1} - \frac{23 b^2 \sqrt{-d (c^2 x^2 - 1)}\, d^2 \arcsin(c x)^2}{15 (c^2 x^2 - 1)}$$

$$- \frac{22 b^2 \sqrt{-d (c^2 x^2 - 1)}\, d^2 \arcsin(c x) \sqrt{-c^2 x^2 + 1}\, x^3 c^3}{45 (c^2 x^2 - 1)} + \frac{46 b^2 \sqrt{-d (c^2 x^2 - 1)}\, d^2 \arcsin(c x) \sqrt{-c^2 x^2 + 1}\, x c}{15 (c^2 x^2 - 1)}$$

$$+ \frac{2 I b^2 \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1}\, d^2 \arcsin(c x) \operatorname{polylog}\left(2, I c x + \sqrt{-c^2 x^2 + 1}\right)}{c^2 x^2 - 1}$$

$$- \frac{2 I b^2 \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1}\, d^2 \arcsin(c x) \operatorname{polylog}\left(2, -I c x - \sqrt{-c^2 x^2 + 1}\right)}{c^2 x^2 - 1}$$

$$- \frac{b^2 \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1}\, d^2 \arcsin(c x)^2 \ln\left(1 - I c x - \sqrt{-c^2 x^2 + 1}\right)}{c^2 x^2 - 1}$$

$$+ \frac{b^2 \sqrt{-d (c^2 x^2 - 1)} \sqrt{-c^2 x^2 + 1}\, d^2 \arcsin(c x)^2 \ln\left(1 + I c x + \sqrt{-c^2 x^2 + 1}\right)}{c^2 x^2 - 1} + \frac{b^2 \sqrt{-d (c^2 x^2 - 1)}\, d^2 \arcsin(c x)^2 x^6 c^6}{5 (c^2 x^2 - 1)}$$

$$- \frac{14 b^2 \sqrt{-d (c^2 x^2 - 1)}\, d^2 \arcsin(c x)^2 x^4 c^4}{15 (c^2 x^2 - 1)} + \frac{34 b^2 \sqrt{-d (c^2 x^2 - 1)}\, d^2 \arcsin(c x)^2 x^2 c^2}{15 (c^2 x^2 - 1)}$$

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

$$- \frac{2 b^2 \sqrt{-d (c^2 x^2 - 1)}\, d^2 x^6 c^6}{125 (c^2 x^2 - 1)} + \frac{532 b^2 \sqrt{-d (c^2 x^2 - 1)}\, d^2 x^4 c^4}{3375 (c^2 x^2 - 1)} - \frac{9872 b^2 \sqrt{-d (c^2 x^2 - 1)}\, d^2 c^2 x^2}{3375 (c^2 x^2 - 1)} - \frac{46 a b \sqrt{-d (c^2 x^2 - 1)}\, d^2 \arcsin(c x)}{15 (c^2 x^2 - 1)}$$

$$+ \frac{a^2 d (-c^2 d x^2 + d)^{3/2}}{3} - a^2 d^{5/2} \ln\left(\frac{2 d + 2 \sqrt{d} \sqrt{-c^2 d x^2 + d}}{x}\right) + a^2 \sqrt{-c^2 d x^2 + d}\, d^2 + \frac{(-c^2 d x^2 + d)^{5/2} a^2}{5} + \frac{9394 b^2 \sqrt{-d (c^2 x^2 - 1)}\, d^2}{3375 (c^2 x^2 - 1)}$$

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

$$\int \frac{(-c^2 d x^2 + d)^{5/2} (a + b \arcsin(c x))^2}{x^2}\, dx$$

Optimal(type 4, 521 leaves, 23 steps):

$$- \frac{5 c^2 d x (-c^2 d x^2 + d)^{3/2} (a + b \arcsin(c x))^2}{4} - \frac{(-c^2 d x^2 + d)^{5/2} (a + b \arcsin(c x))^2}{x} + \frac{31 b^2 c^2 d^2 x \sqrt{-c^2 d x^2 + d}}{64}$$

$$+ \frac{b^2 c^2 d^2 x (-c^2 x^2 + 1) \sqrt{-c^2 d x^2 + d}}{32} - \frac{b c d^2 (-c^2 x^2 + 1)^{3/2} (a + b \arcsin(c x)) \sqrt{-c^2 d x^2 + d}}{8} - \frac{15 c^2 d^2 x (a + b \arcsin(c x))^2 \sqrt{-c^2 d x^2 + d}}{8}$$

$$-\frac{89 b^2 c d^2 \arcsin(cx)\sqrt{-c^2 d x^2+d}}{64\sqrt{-c^2x^2+1}}+\frac{15 b c^3 d^2 x^2 (a+b\arcsin(cx))\sqrt{-c^2 d x^2+d}}{8\sqrt{-c^2x^2+1}}-\frac{I c d^2 (a+b\arcsin(cx))^2\sqrt{-c^2 d x^2+d}}{\sqrt{-c^2x^2+1}}$$

$$-\frac{5 c d^2 (a+b\arcsin(cx))^3\sqrt{-c^2 d x^2+d}}{8 b\sqrt{-c^2x^2+1}}+\frac{2 b c d^2 (a+b\arcsin(cx))\ln\left(1-\left(I c x+\sqrt{-c^2x^2+1}\right)^2\right)\sqrt{-c^2 d x^2+d}}{\sqrt{-c^2x^2+1}}$$

$$-\frac{I b^2 c d^2 \operatorname{polylog}\left(2,\left(I c x+\sqrt{-c^2x^2+1}\right)^2\right)\sqrt{-c^2 d x^2+d}}{\sqrt{-c^2x^2+1}}+b c d^2 (a+b\arcsin(cx))\sqrt{-c^2x^2+1}\sqrt{-c^2 d x^2+d}$$

Result(type 4, 1445 leaves):

$$-\frac{15 a^2 c^2 d^3 \arctan\left(\frac{\sqrt{c^2 d}\, x}{\sqrt{-c^2 d x^2+d}}\right)}{8\sqrt{c^2 d}}-\frac{15 a^2 c^2 d^2 x\sqrt{-c^2 d x^2+d}}{8}-\frac{a^2 (-c^2 d x^2+d)^{7/2}}{d x}-a^2 c^2 x (-c^2 d x^2+d)^{5/2}-\frac{b^2\sqrt{-d (c^2x^2-1)}\, c^6 d^2 x^5}{32 (c^2x^2-1)}$$

$$+\frac{35 b^2\sqrt{-d (c^2x^2-1)}\, c^4 d^2 x^3}{64 (c^2x^2-1)}-\frac{33 b^2\sqrt{-d (c^2x^2-1)}\, c^2 d^2 x}{64 (c^2x^2-1)}+\frac{b^2\sqrt{-d (c^2x^2-1)}\arcsin(cx)^2 d^2}{(c^2x^2-1) x}$$

$$+\frac{2 I b^2\sqrt{-d (c^2x^2-1)}\, c d^2\sqrt{-c^2x^2+1}\operatorname{polylog}\left(2,-I c x-\sqrt{-c^2x^2+1}\right)}{c^2x^2-1}+\frac{2 a b\sqrt{-d (c^2x^2-1)}\arcsin(cx)\, d^2}{(c^2x^2-1) x}$$

$$+\frac{33 a b\sqrt{-d (c^2x^2-1)}\, c d^2\sqrt{-c^2x^2+1}}{64 (c^2x^2-1)}+\frac{5 b^2\sqrt{-d (c^2x^2-1)}\sqrt{-c^2x^2+1}\arcsin(cx)^3 c d^2}{8 (c^2x^2-1)}+\frac{b^2\sqrt{-d (c^2x^2-1)}\, c^6 d^2\arcsin(cx)^2 x^5}{4 (c^2x^2-1)}$$

$$-\frac{11 b^2\sqrt{-d (c^2x^2-1)}\, c^4 d^2\arcsin(cx)^2 x^3}{8 (c^2x^2-1)}+\frac{b^2\sqrt{-d (c^2x^2-1)}\, c^2 d^2\arcsin(cx)^2 x}{8 (c^2x^2-1)}+\frac{33 b^2\sqrt{-d (c^2x^2-1)}\, c d^2\arcsin(cx)\sqrt{-c^2x^2+1}}{64 (c^2x^2-1)}$$

$$+\frac{b^2\sqrt{-d (c^2x^2-1)}\, c^5 d^2\arcsin(cx)\sqrt{-c^2x^2+1}\, x^4}{8 (c^2x^2-1)}-\frac{9 b^2\sqrt{-d (c^2x^2-1)}\, c^3 d^2\arcsin(cx)\sqrt{-c^2x^2+1}\, x^2}{8 (c^2x^2-1)}$$

$$-\frac{2 b^2\sqrt{-d (c^2x^2-1)}\, c d^2\sqrt{-c^2x^2+1}\arcsin(cx)\ln\left(1-I c x-\sqrt{-c^2x^2+1}\right)}{c^2x^2-1}$$

$$-\frac{2 b^2\sqrt{-d (c^2x^2-1)}\, c d^2\sqrt{-c^2x^2+1}\arcsin(cx)\ln\left(1+I c x+\sqrt{-c^2x^2+1}\right)}{c^2x^2-1}+\frac{I b^2\sqrt{-d (c^2x^2-1)}\, c d^2\arcsin(cx)^2\sqrt{-c^2x^2+1}}{c^2x^2-1}$$

$$+\frac{2 I b^2\sqrt{-d (c^2x^2-1)}\, c d^2\sqrt{-c^2x^2+1}\operatorname{polylog}\left(2, I c x+\sqrt{-c^2x^2+1}\right)}{c^2x^2-1}+\frac{15 a b\sqrt{-d (c^2x^2-1)}\sqrt{-c^2x^2+1}\arcsin(cx)^2 c d^2}{8 (c^2x^2-1)}$$

$$+\frac{a b\sqrt{-d (c^2x^2-1)}\, c^6 d^2\arcsin(cx)\, x^5}{2 (c^2x^2-1)}-\frac{11 a b\sqrt{-d (c^2x^2-1)}\, c^4 d^2\arcsin(cx)\, x^3}{4 (c^2x^2-1)}+\frac{a b\sqrt{-d (c^2x^2-1)}\, c^2 d^2\arcsin(cx)\, x}{4 (c^2x^2-1)}$$

$$-\frac{2 a b\sqrt{-d (c^2x^2-1)}\sqrt{-c^2x^2+1}\ln\left(\left(I c x+\sqrt{-c^2x^2+1}\right)^2-1\right) c d^2}{c^2x^2-1}+\frac{a b\sqrt{-d (c^2x^2-1)}\, c^5 d^2\sqrt{-c^2x^2+1}\, x^4}{8 (c^2x^2-1)}$$

$$-\frac{9 a b \sqrt{-d (c^2 x^2-1)}\, c^3 d^2 \sqrt{-c^2 x^2+1}\, x^2}{8 (c^2 x^2-1)}+\frac{2 I a b \sqrt{-c^2 x^2+1}\, \sqrt{-d (c^2 x^2-1)}\, \arcsin(c x)\, c d^2}{c^2 x^2-1}-\frac{5 a^2 c^2 d x (-c^2 d x^2+d)^{3/2}}{4}$$

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

$$\int \frac{(-c^2 d x^2+d)^{5/2} (a+b \arcsin(c x))^2}{x^4}\, dx$$

Optimal(type 4, 541 leaves, 27 steps):

$$\frac{5 c^2 d (-c^2 d x^2+d)^{3/2} (a+b \arcsin(c x))^2}{3 x}-\frac{(-c^2 d x^2+d)^{5/2} (a+b \arcsin(c x))^2}{3 x^3}-\frac{7 b^2 c^4 d^2 x \sqrt{-c^2 d x^2+d}}{12}-\frac{b^2 c^2 d^2 (-c^2 x^2+1) \sqrt{-c^2 d x^2+d}}{3 x}$$
$$-\frac{b c d^2 (-c^2 x^2+1)^{3/2} (a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{3 x^2}+\frac{5 c^4 d^2 x (a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{2}+\frac{23 b^2 c^3 d^2 \arcsin(c x) \sqrt{-c^2 d x^2+d}}{12 \sqrt{-c^2 x^2+1}}$$
$$-\frac{5 b c^5 d^2 x^2 (a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{2 \sqrt{-c^2 x^2+1}}+\frac{7 I c^3 d^2 (a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{3 \sqrt{-c^2 x^2+1}}+\frac{5 c^3 d^2 (a+b \arcsin(c x))^3 \sqrt{-c^2 d x^2+d}}{6 b \sqrt{-c^2 x^2+1}}$$
$$-\frac{14 b c^3 d^2 (a+b \arcsin(c x)) \ln\left(1-\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right) \sqrt{-c^2 d x^2+d}}{3 \sqrt{-c^2 x^2+1}}+\frac{7 I b^2 c^3 d^2 \operatorname{polylog}\left(2, \left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right) \sqrt{-c^2 d x^2+d}}{3 \sqrt{-c^2 x^2+1}}$$
$$-\frac{7 b c^3 d^2 (a+b \arcsin(c x)) \sqrt{-c^2 x^2+1}\, \sqrt{-c^2 d x^2+d}}{3}$$

Result(type ?, 3854 leaves): Display of huge result suppressed!

Problem 64: Result more than twice size of optimal antiderivative.

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

Optimal(type 3, 134 leaves, 4 steps):

$$\frac{2 b^2 (-c^2 x^2+1)}{c^2 \sqrt{-c^2 d x^2+d}}+\frac{2 a b x \sqrt{-c^2 x^2+1}}{c \sqrt{-c^2 d x^2+d}}+\frac{2 b^2 x \arcsin(c x) \sqrt{-c^2 x^2+1}}{c \sqrt{-c^2 d x^2+d}}-\frac{(a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{c^2 d}$$

Result(type 3, 315 leaves):

$$-\frac{a^2 \sqrt{-c^2 d x^2+d}}{c^2 d}+b^2 \left(-\frac{\sqrt{-d (c^2 x^2-1)}\, \left(c^2 x^2-I c x \sqrt{-c^2 x^2+1}-1\right) (2 I \arcsin(c x)+\arcsin(c x)^2-2)}{2 c^2 d (c^2 x^2-1)}\right.$$
$$\left.-\frac{\sqrt{-d (c^2 x^2-1)}\, \left(I \sqrt{-c^2 x^2+1}\, x c+c^2 x^2-1\right) (-2 I \arcsin(c x)+\arcsin(c x)^2-2)}{2 c^2 d (c^2 x^2-1)}\right)+2 a b \left(\right.$$
$$\left.-\frac{(\arcsin(c x)+I) \sqrt{-d (c^2 x^2-1)}\, \left(c^2 x^2-I c x \sqrt{-c^2 x^2+1}-1\right)}{2 c^2 d (c^2 x^2-1)}-\frac{(\arcsin(c x)-I) \sqrt{-d (c^2 x^2-1)}\, \left(I \sqrt{-c^2 x^2+1}\, x c+c^2 x^2-1\right)}{2 c^2 d (c^2 x^2-1)}\right)$$

Problem 65: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b\arcsin(cx))^2}{\sqrt{-c^2 d x^2+d}}\, dx$$

Optimal(type 3, 43 leaves, 1 step):

$$\frac{(a+b\arcsin(cx))^3\sqrt{-c^2x^2+1}}{3bc\sqrt{-c^2dx^2+d}}$$

Result(type 3, 142 leaves):

$$\frac{a^2\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2dx^2+d}}\right)}{\sqrt{c^2d}}-\frac{b^2\sqrt{-d(c^2x^2-1)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)^3}{3c(c^2x^2-1)d}-\frac{ab\sqrt{-d(c^2x^2-1)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)^2}{c(c^2x^2-1)d}$$

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

$$\int \frac{(a+b\arcsin(cx))^2}{x^3\sqrt{-c^2dx^2+d}}\, dx$$

Optimal(type 4, 406 leaves, 13 steps):

$$-\frac{bc(a+b\arcsin(cx))\sqrt{-c^2x^2+1}}{x\sqrt{-c^2dx^2+d}}-\frac{c^2(a+b\arcsin(cx))^2\operatorname{arctanh}\left(Icx+\sqrt{-c^2x^2+1}\right)\sqrt{-c^2x^2+1}}{\sqrt{-c^2dx^2+d}}-\frac{b^2c^2\operatorname{arctanh}\left(\sqrt{-c^2x^2+1}\right)\sqrt{-c^2x^2+1}}{\sqrt{-c^2dx^2+d}}$$
$$+\frac{Ibc^2(a+b\arcsin(cx))\operatorname{polylog}\left(2,-Icx-\sqrt{-c^2x^2+1}\right)\sqrt{-c^2x^2+1}}{\sqrt{-c^2dx^2+d}}-\frac{Ibc^2(a+b\arcsin(cx))\operatorname{polylog}\left(2,Icx+\sqrt{-c^2x^2+1}\right)\sqrt{-c^2x^2+1}}{\sqrt{-c^2dx^2+d}}$$
$$-\frac{b^2c^2\operatorname{polylog}\left(3,-Icx-\sqrt{-c^2x^2+1}\right)\sqrt{-c^2x^2+1}}{\sqrt{-c^2dx^2+d}}+\frac{b^2c^2\operatorname{polylog}\left(3,Icx+\sqrt{-c^2x^2+1}\right)\sqrt{-c^2x^2+1}}{\sqrt{-c^2dx^2+d}}-\frac{(a+b\arcsin(cx))^2\sqrt{-c^2dx^2+d}}{2dx^2}$$

Result(type 4, 1106 leaves):

$$-\frac{a^2\sqrt{-c^2dx^2+d}}{2dx^2}-\frac{a^2c^2\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2dx^2+d}}{x}\right)}{2\sqrt{d}}-\frac{b^2\arcsin(cx)^2\sqrt{-d(c^2x^2-1)}\,c^2}{2d(c^2x^2-1)}+\frac{b^2\arcsin(cx)\sqrt{-d(c^2x^2-1)}\,\sqrt{-c^2x^2+1}\,c}{xd(c^2x^2-1)}$$
$$+\frac{b^2\arcsin(cx)^2\sqrt{-d(c^2x^2-1)}}{2x^2d(c^2x^2-1)}+\frac{Iab\sqrt{-c^2x^2+1}\,\sqrt{-d(c^2x^2-1)}\,c^2\operatorname{polylog}\left(2,Icx+\sqrt{-c^2x^2+1}\right)}{d(c^2x^2-1)}$$
$$-\frac{Ib^2\sqrt{-d(c^2x^2-1)}\,\sqrt{-c^2x^2+1}\,c^2\arcsin(cx)\operatorname{polylog}\left(2,-Icx-\sqrt{-c^2x^2+1}\right)}{d(c^2x^2-1)}$$
$$-\frac{b^2\sqrt{-d(c^2x^2-1)}\,\sqrt{-c^2x^2+1}\,c^2\arcsin(cx)^2\ln\left(1-Icx-\sqrt{-c^2x^2+1}\right)}{2d(c^2x^2-1)}$$

$$+\frac{b^2\sqrt{-d(c^2x^2-1)}\sqrt{-c^2x^2+1}\,c^2\arcsin(cx)^2\ln\left(1+\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)}{2d(c^2x^2-1)}+\frac{2b^2\sqrt{-d(c^2x^2-1)}\sqrt{-c^2x^2+1}\,c^2\operatorname{arctanh}\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)}{d(c^2x^2-1)}$$

$$-\frac{b^2\sqrt{-d(c^2x^2-1)}\sqrt{-c^2x^2+1}\,c^2\operatorname{polylog}\left(3,\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)}{d(c^2x^2-1)}+\frac{b^2\sqrt{-d(c^2x^2-1)}\sqrt{-c^2x^2+1}\,c^2\operatorname{polylog}\left(3,-\mathrm{I}cx-\sqrt{-c^2x^2+1}\right)}{d(c^2x^2-1)}$$

$$-\frac{ab\sqrt{-d(c^2x^2-1)}\arcsin(cx)\,c^2}{d(c^2x^2-1)}+\frac{ab\sqrt{-d(c^2x^2-1)}\sqrt{-c^2x^2+1}\,c}{xd(c^2x^2-1)}+\frac{ab\arcsin(cx)\sqrt{-d(c^2x^2-1)}}{x^2d(c^2x^2-1)}$$

$$-\frac{ab\sqrt{-c^2x^2+1}\sqrt{-d(c^2x^2-1)}\,c^2\arcsin(cx)\ln\left(1-\mathrm{I}cx-\sqrt{-c^2x^2+1}\right)}{d(c^2x^2-1)}$$

$$+\frac{ab\sqrt{-c^2x^2+1}\sqrt{-d(c^2x^2-1)}\,c^2\arcsin(cx)\ln\left(1+\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)}{d(c^2x^2-1)}-\frac{\mathrm{I}ab\sqrt{-c^2x^2+1}\sqrt{-d(c^2x^2-1)}\,c^2\operatorname{polylog}\left(2,-\mathrm{I}cx-\sqrt{-c^2x^2+1}\right)}{d(c^2x^2-1)}$$

$$+\frac{\mathrm{I}b^2\sqrt{-d(c^2x^2-1)}\sqrt{-c^2x^2+1}\,c^2\arcsin(cx)\operatorname{polylog}\left(2,\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)}{d(c^2x^2-1)}$$

Problem 67: Result more than twice size of optimal antiderivative.

$$\int\frac{(a+b\arcsin(cx))^2}{x^4\sqrt{-c^2dx^2+d}}\,dx$$

Optimal(type 4, 301 leaves, 9 steps):

$$-\frac{b^2c^2(-c^2x^2+1)}{3x\sqrt{-c^2dx^2+d}}-\frac{bc(a+b\arcsin(cx))\sqrt{-c^2x^2+1}}{3x^2\sqrt{-c^2dx^2+d}}-\frac{2\mathrm{I}c^3(a+b\arcsin(cx))^2\sqrt{-c^2x^2+1}}{3\sqrt{-c^2dx^2+d}}$$

$$+\frac{4bc^3(a+b\arcsin(cx))\ln\left(1-\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)^2\right)\sqrt{-c^2x^2+1}}{3\sqrt{-c^2dx^2+d}}-\frac{2\mathrm{I}b^2c^3\operatorname{polylog}\left(2,\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)^2\right)\sqrt{-c^2x^2+1}}{3\sqrt{-c^2dx^2+d}}$$

$$-\frac{(a+b\arcsin(cx))^2\sqrt{-c^2dx^2+d}}{3dx^3}-\frac{2c^2(a+b\arcsin(cx))^2\sqrt{-c^2dx^2+d}}{3dx}$$

Result(type ?, 2319 leaves): Display of huge result suppressed!

Problem 68: Result more than twice size of optimal antiderivative.

$$\int\frac{x^2(a+b\arcsin(cx))^2}{(-c^2dx^2+d)^{3/2}}\,dx$$

Optimal(type 4, 248 leaves, 7 steps):

$$\frac{x(a+b\arcsin(cx))^2}{c^2d\sqrt{-c^2dx^2+d}}-\frac{\mathrm{I}(a+b\arcsin(cx))^2\sqrt{-c^2x^2+1}}{c^3d\sqrt{-c^2dx^2+d}}-\frac{(a+b\arcsin(cx))^3\sqrt{-c^2x^2+1}}{3bc^3d\sqrt{-c^2dx^2+d}}$$

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

Result(type 4, 580 leaves):

$$\frac{a^2 x}{c^2 d \sqrt{-c^2 d x^2+d}}-\frac{a^2 \arctan\left(\frac{\sqrt{c^2 d}\, x}{\sqrt{-c^2 d x^2+d}}\right)}{c^2 d \sqrt{c^2 d}}+\frac{b^2 \sqrt{-d (c^2 x^2-1)} \sqrt{-c^2 x^2+1} \arcsin(c x)^3}{3 d^2 c^3 (c^2 x^2-1)}+\frac{I b^2 \sqrt{-d (c^2 x^2-1)} \arcsin(c x)^2 \sqrt{-c^2 x^2+1}}{d^2 c^3 (c^2 x^2-1)}$$

$$-\frac{b^2 \sqrt{-d (c^2 x^2-1)} \arcsin(c x)^2 x}{d^2 c^2 (c^2 x^2-1)}-\frac{2 b^2 \sqrt{-c^2 x^2+1} \sqrt{-d (c^2 x^2-1)} \arcsin(c x) \ln\left(1+\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{d^2 c^3 (c^2 x^2-1)}$$

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

$$+\frac{2 I a b \sqrt{-c^2 x^2+1} \sqrt{-d (c^2 x^2-1)} \arcsin(c x)}{c^3 (c^2 x^2-1) d^2}-\frac{2 a b \sqrt{-d (c^2 x^2-1)} \arcsin(c x) x}{c^2 (c^2 x^2-1) d^2}$$

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

Problem 69: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 490 leaves, 15 steps):

$$\frac{(a+b \arcsin(c x))^2}{d \sqrt{-c^2 d x^2+d}}+\frac{4 I b (a+b \arcsin(c x)) \arctan\left(I c x+\sqrt{-c^2 x^2+1}\right) \sqrt{-c^2 x^2+1}}{d \sqrt{-c^2 d x^2+d}}-\frac{2 (a+b \arcsin(c x))^2 \operatorname{arctanh}\left(I c x+\sqrt{-c^2 x^2+1}\right) \sqrt{-c^2 x^2+1}}{d \sqrt{-c^2 d x^2+d}}$$

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

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

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

Result(type 4, 1095 leaves):

$$\frac{a^2}{d\sqrt{-c^2dx^2+d}}-\frac{a^2\ln\left(\frac{2d+2\sqrt{d}\sqrt{-c^2dx^2+d}}{x}\right)}{d^{3/2}}-\frac{b^2\sqrt{-d(c^2x^2-1)}\arcsin(cx)^2}{d^2(c^2x^2-1)}$$
$$-\frac{b^2\sqrt{-c^2x^2+1}\sqrt{-d(c^2x^2-1)}\arcsin(cx)^2\ln\left(1-Icx-\sqrt{-c^2x^2+1}\right)}{d^2(c^2x^2-1)}+\frac{b^2\sqrt{-c^2x^2+1}\sqrt{-d(c^2x^2-1)}\arcsin(cx)^2\ln\left(1+Icx+\sqrt{-c^2x^2+1}\right)}{d^2(c^2x^2-1)}$$
$$-\frac{2b^2\sqrt{-c^2x^2+1}\sqrt{-d(c^2x^2-1)}\arcsin(cx)\ln\left(1+I\left(Icx+\sqrt{-c^2x^2+1}\right)\right)}{d^2(c^2x^2-1)}$$
$$+\frac{2b^2\sqrt{-c^2x^2+1}\sqrt{-d(c^2x^2-1)}\arcsin(cx)\ln\left(1-I\left(Icx+\sqrt{-c^2x^2+1}\right)\right)}{d^2(c^2x^2-1)}-\frac{2b^2\sqrt{-c^2x^2+1}\sqrt{-d(c^2x^2-1)}\,\mathrm{polylog}\left(3,Icx+\sqrt{-c^2x^2+1}\right)}{d^2(c^2x^2-1)}$$
$$+\frac{2b^2\sqrt{-c^2x^2+1}\sqrt{-d(c^2x^2-1)}\,\mathrm{polylog}\left(3,-Icx-\sqrt{-c^2x^2+1}\right)}{d^2(c^2x^2-1)}-\frac{2Iab\sqrt{-d(c^2x^2-1)}\sqrt{-c^2x^2+1}\,\mathrm{dilog}\left(1+Icx+\sqrt{-c^2x^2+1}\right)}{d^2(c^2x^2-1)}$$
$$-\frac{2Ib^2\sqrt{-c^2x^2+1}\sqrt{-d(c^2x^2-1)}\arcsin(cx)\,\mathrm{polylog}\left(2,-Icx-\sqrt{-c^2x^2+1}\right)}{d^2(c^2x^2-1)}-\frac{4Iab\sqrt{-d(c^2x^2-1)}\sqrt{-c^2x^2+1}\arctan\left(Icx+\sqrt{-c^2x^2+1}\right)}{d^2(c^2x^2-1)}$$
$$-\frac{2Ib^2\sqrt{-c^2x^2+1}\sqrt{-d(c^2x^2-1)}\,\mathrm{dilog}\left(1-I\left(Icx+\sqrt{-c^2x^2+1}\right)\right)}{d^2(c^2x^2-1)}-\frac{2ab\sqrt{-d(c^2x^2-1)}\arcsin(cx)}{d^2(c^2x^2-1)}$$
$$+\frac{2Ib^2\sqrt{-c^2x^2+1}\sqrt{-d(c^2x^2-1)}\arcsin(cx)\,\mathrm{polylog}\left(2,Icx+\sqrt{-c^2x^2+1}\right)}{d^2(c^2x^2-1)}$$
$$+\frac{2Ib^2\sqrt{-c^2x^2+1}\sqrt{-d(c^2x^2-1)}\,\mathrm{dilog}\left(1+I\left(Icx+\sqrt{-c^2x^2+1}\right)\right)}{d^2(c^2x^2-1)}-\frac{2Iab\sqrt{-d(c^2x^2-1)}\sqrt{-c^2x^2+1}\,\mathrm{dilog}\left(Icx+\sqrt{-c^2x^2+1}\right)}{d^2(c^2x^2-1)}$$
$$+\frac{2ab\sqrt{-d(c^2x^2-1)}\sqrt{-c^2x^2+1}\arcsin(cx)\ln\left(1+Icx+\sqrt{-c^2x^2+1}\right)}{d^2(c^2x^2-1)}$$

Problem 70: Result more than twice size of optimal antiderivative.

$$\int\frac{x(a+b\arcsin(cx))^2}{(-c^2dx^2+d)^{5/2}}\,dx$$

Optimal(type 4, 281 leaves, 9 steps):

$$\frac{(a+b\arcsin(cx))^2}{3c^2d(-c^2dx^2+d)^{3/2}}+\frac{b^2}{3c^2d^2\sqrt{-c^2dx^2+d}}-\frac{bx(a+b\arcsin(cx))}{3cd^2\sqrt{-c^2x^2+1}\sqrt{-c^2dx^2+d}}+\frac{2Ib(a+b\arcsin(cx))\arctan\left(Icx+\sqrt{-c^2x^2+1}\right)\sqrt{-c^2x^2+1}}{3c^2d^2\sqrt{-c^2dx^2+d}}$$
$$-\frac{Ib^2\,\mathrm{polylog}\left(2,-I\left(Icx+\sqrt{-c^2x^2+1}\right)\right)\sqrt{-c^2x^2+1}}{3c^2d^2\sqrt{-c^2dx^2+d}}+\frac{Ib^2\,\mathrm{polylog}\left(2,I\left(Icx+\sqrt{-c^2x^2+1}\right)\right)\sqrt{-c^2x^2+1}}{3c^2d^2\sqrt{-c^2dx^2+d}}$$

Result(type 4, 761 leaves):

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

$$+\frac{b^2 \sqrt{-d \left(c^2 x^2-1\right)}}{3 d^3 \left(c^4 x^4-2 c^2 x^2+1\right) c^2}+\frac{\mathrm{I}\, b^2 \sqrt{-d \left(c^2 x^2-1\right)} \sqrt{-c^2 x^2+1}\, \mathrm{dilog}\left(1+\mathrm{I}\left(\mathrm{I} c x+\sqrt{-c^2 x^2+1}\right)\right)}{3 d^3 \left(c^2 x^2-1\right) c^2}$$

$$-\frac{\mathrm{I}\, b^2 \sqrt{-d \left(c^2 x^2-1\right)} \sqrt{-c^2 x^2+1}\, \mathrm{dilog}\left(1-\mathrm{I}\left(\mathrm{I} c x+\sqrt{-c^2 x^2+1}\right)\right)}{3 d^3 \left(c^2 x^2-1\right) c^2}-\frac{b^2 \sqrt{-d \left(c^2 x^2-1\right)} \sqrt{-c^2 x^2+1}\, \arcsin(c x) \ln\left(1+\mathrm{I}\left(\mathrm{I} c x+\sqrt{-c^2 x^2+1}\right)\right)}{3 d^3 \left(c^2 x^2-1\right) c^2}$$

$$+\frac{b^2 \sqrt{-d \left(c^2 x^2-1\right)} \sqrt{-c^2 x^2+1}\, \arcsin(c x) \ln\left(1-\mathrm{I}\left(\mathrm{I} c x+\sqrt{-c^2 x^2+1}\right)\right)}{3 d^3 \left(c^2 x^2-1\right) c^2}-\frac{a b \sqrt{-d \left(c^2 x^2-1\right)} \sqrt{-c^2 x^2+1}\, x}{3 d^3 \left(c^4 x^4-2 c^2 x^2+1\right) c}$$

$$+\frac{2 a b \sqrt{-d \left(c^2 x^2-1\right)}\, \arcsin(c x)}{3 d^3 \left(c^4 x^4-2 c^2 x^2+1\right) c^2}+\frac{a b \sqrt{-d \left(c^2 x^2-1\right)} \sqrt{-c^2 x^2+1}\, \ln\left(\mathrm{I} c x+\sqrt{-c^2 x^2+1}+\mathrm{I}\right)}{3 d^3 \left(c^2 x^2-1\right) c^2}$$

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

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Problem 71: Result more than twice size of optimal antiderivative.
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$$\int \frac{\left(a+b \arcsin(c x)\right)^2}{\left(-c^2 d x^2+d\right)^{5/2}}\, dx$$

```
Optimal(type 4, 293 leaves, 9 steps):
```

$$\frac{x \left(a+b \arcsin(c x)\right)^2}{3 d \left(-c^2 d x^2+d\right)^{3/2}}+\frac{b^2 x}{3 d^2 \sqrt{-c^2 d x^2+d}}+\frac{2 x \left(a+b \arcsin(c x)\right)^2}{3 d^2 \sqrt{-c^2 d x^2+d}}-\frac{b \left(a+b \arcsin(c x)\right)}{3 c d^2 \sqrt{-c^2 x^2+1} \sqrt{-c^2 d x^2+d}}-\frac{2 \mathrm{I} \left(a+b \arcsin(c x)\right)^2 \sqrt{-c^2 x^2+1}}{3 c d^2 \sqrt{-c^2 d x^2+d}}$$

$$+\frac{4 b \left(a+b \arcsin(c x)\right) \ln\left(1+\left(\mathrm{I} c x+\sqrt{-c^2 x^2+1}\right)^2\right) \sqrt{-c^2 x^2+1}}{3 c d^2 \sqrt{-c^2 d x^2+d}}-\frac{2 \mathrm{I}\, b^2 \mathrm{polylog}\left(2,-\left(\mathrm{I} c x+\sqrt{-c^2 x^2+1}\right)^2\right) \sqrt{-c^2 x^2+1}}{3 c d^2 \sqrt{-c^2 d x^2+d}}$$

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Result(type ?, 2895 leaves): Display of huge result suppressed!
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Problem 74: Unable to integrate problem.
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$$\int x^m \left(-c^2 d x^2+d\right) \left(a+b \arcsin(c x)\right)^2 dx$$

```
Optimal(type 5, 333 leaves, 6 steps):
```

$$\frac{2 b^2 c^2 d x^{3+m}}{(3+m)^3}+\frac{2 d x^{1+m} \left(a+b \arcsin(c x)\right)^2}{m^2+4 m+3}+\frac{d x^{1+m} \left(-c^2 x^2+1\right) \left(a+b \arcsin(c x)\right)^2}{3+m}$$

$$-\frac{2 b c d x^{2+m} \left(a+b \arcsin(c x)\right) \mathrm{hypergeom}\left(\left[\frac{1}{2}, 1+\frac{m}{2}\right], \left[2+\frac{m}{2}\right], c^2 x^2\right)}{(2+m) (3+m)^2}$$

$$-\frac{4 b c d x^{2+m} (a+b\arcsin(c x))\ \mathrm{hypergeom}\left(\left[\frac{1}{2}, 1+\frac{m}{2}\right], \left[2+\frac{m}{2}\right], c^2 x^2\right)}{m^3+6 m^2+11 m+6}$$
$$+\frac{2 b^2 c^2 d x^{3+m} \mathit{HypergeometricPFQ}\left(\left[1, \frac{3}{2}+\frac{m}{2}, \frac{3}{2}+\frac{m}{2}\right], \left[2+\frac{m}{2}, \frac{5}{2}+\frac{m}{2}\right], c^2 x^2\right)}{(2+m)(3+m)^3}$$
$$+\frac{4 b^2 c^2 d x^{3+m} \mathit{HypergeometricPFQ}\left(\left[1, \frac{3}{2}+\frac{m}{2}, \frac{3}{2}+\frac{m}{2}\right], \left[2+\frac{m}{2}, \frac{5}{2}+\frac{m}{2}\right], c^2 x^2\right)}{(3+m)^2 (m^2+3 m+2)} - \frac{2 b c d x^{2+m} (a+b\arcsin(c x)) \sqrt{-c^2 x^2+1}}{(3+m)^2}$$

Result(type 8, 27 leaves):

$$\int x^m (-c^2 d x^2+d) (a+b\arcsin(c x))^2 \, dx$$

Problem 121: Unable to integrate problem.

$$\int (-a^2 c x^2+c)^{3/2} \arcsin(a x)^{3/2} \, dx$$

Optimal(type 4, 293 leaves, 17 steps):

$$\frac{x (-a^2 c x^2+c)^{3/2} \arcsin(a x)^{3/2}}{4} + \frac{3 c x \arcsin(a x)^{3/2} \sqrt{-a^2 c x^2+c}}{8} + \frac{3 c \arcsin(a x)^{5/2} \sqrt{-a^2 c x^2+c}}{20 a \sqrt{-a^2 x^2+1}}$$
$$-\frac{3 c\, \mathrm{FresnelC}\left(\frac{2\sqrt{2}\sqrt{\arcsin(a x)}}{\sqrt{\pi}}\right) \sqrt{2}\sqrt{\pi}\sqrt{-a^2 c x^2+c}}{1024 a \sqrt{-a^2 x^2+1}} - \frac{3 c\, \mathrm{FresnelC}\left(\frac{2\sqrt{\arcsin(a x)}}{\sqrt{\pi}}\right) \sqrt{\pi}\sqrt{-a^2 c x^2+c}}{32 a \sqrt{-a^2 x^2+1}}$$
$$+\frac{3 c (-a^2 x^2+1)^{3/2} \sqrt{-a^2 c x^2+c}\sqrt{\arcsin(a x)}}{32 a} + \frac{27 c \sqrt{-a^2 c x^2+c}\sqrt{\arcsin(a x)}}{256 a \sqrt{-a^2 x^2+1}} - \frac{9 a c x^2 \sqrt{-a^2 c x^2+c}\sqrt{\arcsin(a x)}}{32 \sqrt{-a^2 x^2+1}}$$

Result(type 8, 22 leaves):

$$\int (-a^2 c x^2+c)^{3/2} \arcsin(a x)^{3/2} \, dx$$

Problem 122: Unable to integrate problem.

$$\int \sqrt{-a^2 c x^2+c}\, \arcsin(a x)^{5/2} \, dx$$

Optimal(type 4, 199 leaves, 10 steps):

$$\frac{x \arcsin(a x)^{5/2} \sqrt{-a^2 c x^2+c}}{2} + \frac{5 \arcsin(a x)^{3/2} \sqrt{-a^2 c x^2+c}}{16 a \sqrt{-a^2 x^2+1}} - \frac{5 a x^2 \arcsin(a x)^{3/2} \sqrt{-a^2 c x^2+c}}{8 \sqrt{-a^2 x^2+1}} + \frac{\arcsin(a x)^{7/2} \sqrt{-a^2 c x^2+c}}{7 a \sqrt{-a^2 x^2+1}}$$

$$+\frac{15\,\mathrm{FresnelS}\left(\frac{2\sqrt{\arcsin(a x)}}{\sqrt{\pi}}\right)\sqrt{\pi}\,\sqrt{-a^2 c x^2+c}}{128\,a\sqrt{-a^2 x^2+1}}-\frac{15\,x\sqrt{-a^2 c x^2+c}\,\sqrt{\arcsin(a x)}}{32}$$

Result(type 8, 22 leaves):

$$\int\sqrt{-a^2 c x^2+c}\,\arcsin(a x)^{5/2}\,dx$$

Problem 124: Unable to integrate problem.

$$\int\left(a^2-x^2\right)^{3/2}\arcsin\left(\frac{x}{a}\right)^{3/2}dx$$

Optimal(type 4, 289 leaves, 17 steps):

$$\frac{x\left(a^2-x^2\right)^{3/2}\arcsin\left(\frac{x}{a}\right)^{3/2}}{4}+\frac{3\,a^2\,x\arcsin\left(\frac{x}{a}\right)^{3/2}\sqrt{a^2-x^2}}{8}+\frac{3\,a^3\arcsin\left(\frac{x}{a}\right)^{5/2}\sqrt{a^2-x^2}}{20\sqrt{1-\frac{x^2}{a^2}}}$$
$$-\frac{3\,a^3\,\mathrm{FresnelC}\left(\frac{2\sqrt{2}\sqrt{\arcsin\left(\frac{x}{a}\right)}}{\sqrt{\pi}}\right)\sqrt{2}\,\sqrt{\pi}\,\sqrt{a^2-x^2}}{1024\sqrt{1-\frac{x^2}{a^2}}}-\frac{3\,a^3\,\mathrm{FresnelC}\left(\frac{2\sqrt{\arcsin\left(\frac{x}{a}\right)}}{\sqrt{\pi}}\right)\sqrt{\pi}\,\sqrt{a^2-x^2}}{32\sqrt{1-\frac{x^2}{a^2}}}+\frac{3\left(a^2-x^2\right)^{5/2}\sqrt{\arcsin\left(\frac{x}{a}\right)}}{32\,a\sqrt{1-\frac{x^2}{a^2}}}$$
$$+\frac{27\,a^3\sqrt{a^2-x^2}\,\sqrt{\arcsin\left(\frac{x}{a}\right)}}{256\sqrt{1-\frac{x^2}{a^2}}}-\frac{9\,a\,x^2\sqrt{a^2-x^2}\,\sqrt{\arcsin\left(\frac{x}{a}\right)}}{32\sqrt{1-\frac{x^2}{a^2}}}$$

Result(type 8, 22 leaves):

$$\int\left(a^2-x^2\right)^{3/2}\arcsin\left(\frac{x}{a}\right)^{3/2}dx$$

Problem 127: Unable to integrate problem.

$$\int\frac{\sqrt{-a^2 c x^2+c}}{\sqrt{\arcsin(a x)}}\,dx$$

Optimal(type 4, 81 leaves, 5 steps):

$$\frac{\sqrt{-a^2 c x^2+c}\,\operatorname{FresnelC}\left(\frac{2\sqrt{\arcsin(a x)}}{\sqrt{\pi}}\right)\sqrt{\pi}}{2 a\sqrt{-a^2 x^2+1}}+\frac{\sqrt{-a^2 c x^2+c}\,\sqrt{\arcsin(a x)}}{a\sqrt{-a^2 x^2+1}}$$

Result(type 8, 22 leaves):

$$\int \frac{\sqrt{-a^2 c x^2+c}}{\sqrt{\arcsin(a x)}}\,dx$$

Problem 129: Unable to integrate problem.

$$\int \frac{(-a^2 c x^2+c)^{5/2}}{\arcsin(a x)^{3/2}}\,dx$$

Optimal(type 4, 193 leaves, 10 steps):

$$-\frac{3 c^2\operatorname{FresnelS}\left(\frac{2\sqrt{2}\,\sqrt{\arcsin(a x)}}{\sqrt{\pi}}\right)\sqrt{2}\,\sqrt{\pi}\,\sqrt{-a^2 c x^2+c}}{4 a\sqrt{-a^2 x^2+1}}-\frac{15 c^2\operatorname{FresnelS}\left(\frac{2\sqrt{\arcsin(a x)}}{\sqrt{\pi}}\right)\sqrt{\pi}\,\sqrt{-a^2 c x^2+c}}{8 a\sqrt{-a^2 x^2+1}}$$
$$-\frac{c^2\operatorname{FresnelS}\left(\frac{2\sqrt{3}\,\sqrt{\arcsin(a x)}}{\sqrt{\pi}}\right)\sqrt{3}\,\sqrt{\pi}\,\sqrt{-a^2 c x^2+c}}{8 a\sqrt{-a^2 x^2+1}}-\frac{2(-a^2 c x^2+c)^{5/2}\sqrt{-a^2 x^2+1}}{a\sqrt{\arcsin(a x)}}$$

Result(type 8, 22 leaves):

$$\int \frac{(-a^2 c x^2+c)^{5/2}}{\arcsin(a x)^{3/2}}\,dx$$

Problem 130: Unable to integrate problem.

$$\int \frac{(-a^2 c x^2+c)^{3/2}}{\arcsin(a x)^{3/2}}\,dx$$

Optimal(type 4, 135 leaves, 8 steps):

$$-\frac{c\operatorname{FresnelS}\left(\frac{2\sqrt{2}\,\sqrt{\arcsin(a x)}}{\sqrt{\pi}}\right)\sqrt{2}\,\sqrt{\pi}\,\sqrt{-a^2 c x^2+c}}{2 a\sqrt{-a^2 x^2+1}}-\frac{2 c\operatorname{FresnelS}\left(\frac{2\sqrt{\arcsin(a x)}}{\sqrt{\pi}}\right)\sqrt{\pi}\,\sqrt{-a^2 c x^2+c}}{a\sqrt{-a^2 x^2+1}}-\frac{2(-a^2 c x^2+c)^{3/2}\sqrt{-a^2 x^2+1}}{a\sqrt{\arcsin(a x)}}$$

Result(type 8, 22 leaves):

$$\int \frac{(-a^2 c x^2+c)^{3/2}}{\arcsin(a x)^{3/2}}\,dx$$

Problem 133: Unable to integrate problem.

$$\int \sqrt{-c^2 d x^2 + d}\, (a + b \arcsin(c x))^n \, dx$$

Optimal(type 4, 237 leaves, 6 steps):

$$\frac{(a + b \arcsin(c x))^{1+n} \sqrt{-c^2 d x^2 + d}}{2 b c (1 + n) \sqrt{-c^2 x^2 + 1}} - \frac{\mathrm{I}\, 2^{-n-3} (a + b \arcsin(c x))^n \Gamma\left(1 + n, \frac{-2 \mathrm{I} (a + b \arcsin(c x))}{b}\right) \sqrt{-c^2 d x^2 + d}}{c\, \mathrm{e}^{\frac{2 \mathrm{I} a}{b}} \left(\frac{-\mathrm{I} (a + b \arcsin(c x))}{b}\right)^n \sqrt{-c^2 x^2 + 1}}$$
$$+ \frac{\mathrm{I}\, 2^{-n-3} \mathrm{e}^{\frac{2 \mathrm{I} a}{b}} (a + b \arcsin(c x))^n \Gamma\left(1 + n, \frac{2 \mathrm{I} (a + b \arcsin(c x))}{b}\right) \sqrt{-c^2 d x^2 + d}}{c \left(\frac{\mathrm{I} (a + b \arcsin(c x))}{b}\right)^n \sqrt{-c^2 x^2 + 1}}$$

Result(type 8, 26 leaves):

$$\int \sqrt{-c^2 d x^2 + d}\, (a + b \arcsin(c x))^n \, dx$$

Problem 135: Unable to integrate problem.

$$\int x \left(-c^2 d x^2 + d\right)^{5/2} (a + b \arcsin(c x))^n \, dx$$

Optimal(type 4, 743 leaves, 15 steps):

$$-\frac{5 d^2 (a + b \arcsin(c x))^n \Gamma\left(1 + n, \frac{-\mathrm{I} (a + b \arcsin(c x))}{b}\right) \sqrt{-c^2 d x^2 + d}}{128 c^2 \mathrm{e}^{\frac{\mathrm{I} a}{b}} \left(\frac{-\mathrm{I} (a + b \arcsin(c x))}{b}\right)^n \sqrt{-c^2 x^2 + 1}} - \frac{5 d^2 \mathrm{e}^{\frac{\mathrm{I} a}{b}} (a + b \arcsin(c x))^n \Gamma\left(1 + n, \frac{\mathrm{I} (a + b \arcsin(c x))}{b}\right) \sqrt{-c^2 d x^2 + d}}{128 c^2 \left(\frac{\mathrm{I} (a + b \arcsin(c x))}{b}\right)^n \sqrt{-c^2 x^2 + 1}}$$
$$- \frac{3^{1-n} d^2 (a + b \arcsin(c x))^n \Gamma\left(1 + n, \frac{-3 \mathrm{I} (a + b \arcsin(c x))}{b}\right) \sqrt{-c^2 d x^2 + d}}{128 c^2 \mathrm{e}^{\frac{3 \mathrm{I} a}{b}} \left(\frac{-\mathrm{I} (a + b \arcsin(c x))}{b}\right)^n \sqrt{-c^2 x^2 + 1}}$$
$$- \frac{3^{1-n} d^2 \mathrm{e}^{\frac{3 \mathrm{I} a}{b}} (a + b \arcsin(c x))^n \Gamma\left(1 + n, \frac{3 \mathrm{I} (a + b \arcsin(c x))}{b}\right) \sqrt{-c^2 d x^2 + d}}{128 c^2 \left(\frac{\mathrm{I} (a + b \arcsin(c x))}{b}\right)^n \sqrt{-c^2 x^2 + 1}}$$
$$- \frac{d^2 (a + b \arcsin(c x))^n \Gamma\left(1 + n, \frac{-5 \mathrm{I} (a + b \arcsin(c x))}{b}\right) \sqrt{-c^2 d x^2 + d}}{128\, 5^n c^2 \mathrm{e}^{\frac{5 \mathrm{I} a}{b}} \left(\frac{-\mathrm{I} (a + b \arcsin(c x))}{b}\right)^n \sqrt{-c^2 x^2 + 1}}$$

$$-\frac{d^2 e^{\frac{5 I a}{b}} (a+b\arcsin(cx))^n \Gamma\left(1+n, \frac{5 I (a+b\arcsin(cx))}{b}\right)\sqrt{-c^2 d x^2+d}}{128\, 5^n c^2 \left(\frac{I (a+b\arcsin(cx))}{b}\right)^n \sqrt{-c^2 x^2+1}}$$

$$-\frac{7^{-1-n} d^2 (a+b\arcsin(cx))^n \Gamma\left(1+n, \frac{-7 I (a+b\arcsin(cx))}{b}\right)\sqrt{-c^2 d x^2+d}}{128 c^2 e^{\frac{7 I a}{b}} \left(\frac{-I (a+b\arcsin(cx))}{b}\right)^n \sqrt{-c^2 x^2+1}}$$

$$-\frac{7^{-1-n} d^2 e^{\frac{7 I a}{b}} (a+b\arcsin(cx))^n \Gamma\left(1+n, \frac{7 I (a+b\arcsin(cx))}{b}\right)\sqrt{-c^2 d x^2+d}}{128 c^2 \left(\frac{I (a+b\arcsin(cx))}{b}\right)^n \sqrt{-c^2 x^2+1}}$$

Result(type 8, 27 leaves):

$$\int x \left(-c^2 d x^2+d\right)^{5/2} (a+b\arcsin(cx))^n \, dx$$

Problem 136: Unable to integrate problem.

$$\int \left(-c^2 d x^2+d\right)^{5/2} (a+b\arcsin(cx))^n \, dx$$

Optimal(type 4, 644 leaves, 12 steps):

$$\frac{5 d^2 (a+b\arcsin(cx))^{1+n}\sqrt{-c^2 d x^2+d}}{16 b c (1+n)\sqrt{-c^2 x^2+1}} - \frac{15 I 2^{-7-n} d^2 (a+b\arcsin(cx))^n \Gamma\left(1+n, \frac{-2 I (a+b\arcsin(cx))}{b}\right)\sqrt{-c^2 d x^2+d}}{c e^{\frac{2 I a}{b}} \left(\frac{-I (a+b\arcsin(cx))}{b}\right)^n \sqrt{-c^2 x^2+1}}$$

$$+\frac{15 I 2^{-7-n} d^2 e^{\frac{2 I a}{b}} (a+b\arcsin(cx))^n \Gamma\left(1+n, \frac{2 I (a+b\arcsin(cx))}{b}\right)\sqrt{-c^2 d x^2+d}}{c \left(\frac{I (a+b\arcsin(cx))}{b}\right)^n \sqrt{-c^2 x^2+1}}$$

$$-\frac{3 I 2^{-7-2n} d^2 (a+b\arcsin(cx))^n \Gamma\left(1+n, \frac{-4 I (a+b\arcsin(cx))}{b}\right)\sqrt{-c^2 d x^2+d}}{c e^{\frac{4 I a}{b}} \left(\frac{-I (a+b\arcsin(cx))}{b}\right)^n \sqrt{-c^2 x^2+1}}$$

$$+\frac{3 I 2^{-7-2n} d^2 e^{\frac{4 I a}{b}} (a+b\arcsin(cx))^n \Gamma\left(1+n, \frac{4 I (a+b\arcsin(cx))}{b}\right)\sqrt{-c^2 d x^2+d}}{c \left(\frac{I (a+b\arcsin(cx))}{b}\right)^n \sqrt{-c^2 x^2+1}}$$

$$-\frac{I\,2^{-7-n}3^{-1-n}d^2(a+b\arcsin(cx))^n\,\Gamma\left(1+n,\frac{-6I(a+b\arcsin(cx))}{b}\right)\sqrt{-c^2dx^2+d}}{c\,e^{\frac{6Ia}{b}}\left(\frac{-I(a+b\arcsin(cx))}{b}\right)^n\sqrt{-c^2x^2+1}}$$

$$+\frac{I\,2^{-7-n}3^{-1-n}d^2\,e^{\frac{6Ia}{b}}(a+b\arcsin(cx))^n\,\Gamma\left(1+n,\frac{6I(a+b\arcsin(cx))}{b}\right)\sqrt{-c^2dx^2+d}}{c\left(\frac{I(a+b\arcsin(cx))}{b}\right)^n\sqrt{-c^2x^2+1}}$$

Result(type 8, 26 leaves):

$$\int(-c^2dx^2+d)^{5/2}(a+b\arcsin(cx))^n\,dx$$

Problem 137: Unable to integrate problem.

$$\int(cdx+d)^{3/2}(a+b\arcsin(cx))\sqrt{-cfx+f}\,dx$$

Optimal(type 3, 229 leaves, 8 steps):

$$\frac{dx(a+b\arcsin(cx))\sqrt{cdx+d}\sqrt{-cfx+f}}{2}-\frac{d\left(-c^2x^2+1\right)(a+b\arcsin(cx))\sqrt{cdx+d}\sqrt{-cfx+f}}{3c}+\frac{bdx\sqrt{cdx+d}\sqrt{-cfx+f}}{3\sqrt{-c^2x^2+1}}$$

$$-\frac{bcdx^2\sqrt{cdx+d}\sqrt{-cfx+f}}{4\sqrt{-c^2x^2+1}}-\frac{bc^2dx^3\sqrt{cdx+d}\sqrt{-cfx+f}}{9\sqrt{-c^2x^2+1}}+\frac{d(a+b\arcsin(cx))^2\sqrt{cdx+d}\sqrt{-cfx+f}}{4bc\sqrt{-c^2x^2+1}}$$

Result(type 8, 28 leaves):

$$\int(cdx+d)^{3/2}(a+b\arcsin(cx))\sqrt{-cfx+f}\,dx$$

Problem 138: Unable to integrate problem.

$$\int\frac{(a+b\arcsin(cx))\sqrt{-cfx+f}}{(cdx+d)^{5/2}}\,dx$$

Optimal(type 3, 141 leaves, 6 steps):

$$-\frac{2bf^3\left(-c^2x^2+1\right)^{5/2}}{3c(cx+1)(cdx+d)^{5/2}(-cfx+f)^{5/2}}-\frac{f^3(-cx+1)^3\left(-c^2x^2+1\right)(a+b\arcsin(cx))}{3c(cdx+d)^{5/2}(-cfx+f)^{5/2}}-\frac{bf^3\left(-c^2x^2+1\right)^{5/2}\ln(cx+1)}{3c(cdx+d)^{5/2}(-cfx+f)^{5/2}}$$

Result(type 8, 28 leaves):

$$\int\frac{(a+b\arcsin(cx))\sqrt{-cfx+f}}{(cdx+d)^{5/2}}\,dx$$

Problem 139: Unable to integrate problem.

$$\int (c d x + d)^{5/2} (-c f x + f)^{5/2} (a + b \arcsin(c x)) \, dx$$

Optimal(type 3, 265 leaves, 9 steps):

$$-\frac{25 b c x^2 (c d x + d)^{5/2} (-c f x + f)^{5/2}}{96 (-c^2 x^2 + 1)^{5/2}} + \frac{5 b c^3 x^4 (c d x + d)^{5/2} (-c f x + f)^{5/2}}{96 (-c^2 x^2 + 1)^{5/2}} + \frac{x (c d x + d)^{5/2} (-c f x + f)^{5/2} (a + b \arcsin(c x))}{6} + \frac{5 x (c d x + d)^{5/2} (-c f x + f)^{5/2} (a + b \arcsin(c x))}{16 (-c^2 x^2 + 1)^2} + \frac{5 x (c d x + d)^{5/2} (-c f x + f)^{5/2} (a + b \arcsin(c x))}{24 (-c^2 x^2 + 1)} + \frac{5 (c d x + d)^{5/2} (-c f x + f)^{5/2} (a + b \arcsin(c x))^2}{32 b c (-c^2 x^2 + 1)^{5/2}} + \frac{b (c d x + d)^{5/2} (-c f x + f)^{5/2} \sqrt{-c^2 x^2 + 1}}{36 c}$$

Result(type 8, 28 leaves):

$$\int (c d x + d)^{5/2} (-c f x + f)^{5/2} (a + b \arcsin(c x)) \, dx$$

Problem 140: Unable to integrate problem.

$$\int \frac{(c d x + d)^{3/2} (a + b \arcsin(c x))}{\sqrt{-c f x + f}} \, dx$$

Optimal(type 3, 210 leaves, 9 steps):

$$-\frac{2 d^2 (-c^2 x^2 + 1) (a + b \arcsin(c x))}{c \sqrt{c d x + d} \sqrt{-c f x + f}} - \frac{d^2 x (-c^2 x^2 + 1) (a + b \arcsin(c x))}{2 \sqrt{c d x + d} \sqrt{-c f x + f}} + \frac{2 b d^2 x \sqrt{-c^2 x^2 + 1}}{\sqrt{c d x + d} \sqrt{-c f x + f}} + \frac{b c d^2 x^2 \sqrt{-c^2 x^2 + 1}}{4 \sqrt{c d x + d} \sqrt{-c f x + f}} + \frac{3 d^2 (a + b \arcsin(c x))^2 \sqrt{-c^2 x^2 + 1}}{4 b c \sqrt{c d x + d} \sqrt{-c f x + f}}$$

Result(type 8, 28 leaves):

$$\int \frac{(c d x + d)^{3/2} (a + b \arcsin(c x))}{\sqrt{-c f x + f}} \, dx$$

Problem 141: Unable to integrate problem.

$$\int \frac{(c d x + d)^{5/2} (a + b \arcsin(c x))}{(-c f x + f)^{3/2}} \, dx$$

Optimal(type 3, 403 leaves, 7 steps):

$$-\frac{3 b d^4 x (-c^2 x^2 + 1)^{3/2}}{2 (c d x + d)^{3/2} (-c f x + f)^{3/2}} + \frac{b c d^4 x^2 (-c^2 x^2 + 1)^{3/2}}{(c d x + d)^{3/2} (-c f x + f)^{3/2}} - \frac{5 b d^4 (c x + 1)^2 (-c^2 x^2 + 1)^{3/2}}{4 c (c d x + d)^{3/2} (-c f x + f)^{3/2}} + \frac{15 b d^4 (-c^2 x^2 + 1)^{3/2} \arcsin(c x)^2}{4 c (c d x + d)^{3/2} (-c f x + f)^{3/2}} + \frac{2 d^4 (c x + 1)^3 (-c^2 x^2 + 1) (a + b \arcsin(c x))}{c (c d x + d)^{3/2} (-c f x + f)^{3/2}} + \frac{15 d^4 (-c^2 x^2 + 1)^2 (a + b \arcsin(c x))}{2 c (c d x + d)^{3/2} (-c f x + f)^{3/2}} + \frac{5 d^4 (c x + 1) (-c^2 x^2 + 1)^2 (a + b \arcsin(c x))}{2 c (c d x + d)^{3/2} (-c f x + f)^{3/2}}$$

$$-\frac{15 d^4 (-c^2 x^2+1)^{3/2} \arcsin(cx) (a+b \arcsin(cx))}{2 c (c d x+d)^{3/2} (-cfx+f)^{3/2}}+\frac{8 b d^4 (-c^2 x^2+1)^{3/2} \ln(-cx+1)}{c (c d x+d)^{3/2} (-cfx+f)^{3/2}}$$

Result(type 8, 28 leaves):

$$\int \frac{(c d x+d)^{5/2} (a+b \arcsin(cx))}{(-cfx+f)^{3/2}} \, dx$$

Problem 142: Unable to integrate problem.

$$\int \frac{\sqrt{c d x+d}\, (a+b \arcsin(cx))}{(-cfx+f)^{3/2}} \, dx$$

Optimal(type 3, 144 leaves, 8 steps):

$$\frac{2 d^2 (cx+1) (-c^2 x^2+1) (a+b \arcsin(cx))}{c (c d x+d)^{3/2} (-cfx+f)^{3/2}}-\frac{d^2 (-c^2 x^2+1)^{3/2} (a+b \arcsin(cx))^2}{2 b c (c d x+d)^{3/2} (-cfx+f)^{3/2}}+\frac{2 b d^2 (-c^2 x^2+1)^{3/2} \ln(-cx+1)}{c (c d x+d)^{3/2} (-cfx+f)^{3/2}}$$

Result(type 8, 28 leaves):

$$\int \frac{\sqrt{c d x+d}\, (a+b \arcsin(cx))}{(-cfx+f)^{3/2}} \, dx$$

Problem 143: Unable to integrate problem.

$$\int \frac{\sqrt{c d x+d}\, (a+b \arcsin(cx))}{(-cfx+f)^{5/2}} \, dx$$

Optimal(type 3, 142 leaves, 6 steps):

$$-\frac{2 b d^3 (-c^2 x^2+1)^{5/2}}{3 c (-cx+1) (c d x+d)^{5/2} (-cfx+f)^{5/2}}+\frac{d^3 (cx+1)^3 (-c^2 x^2+1) (a+b \arcsin(cx))}{3 c (c d x+d)^{5/2} (-cfx+f)^{5/2}}-\frac{b d^3 (-c^2 x^2+1)^{5/2} \ln(-cx+1)}{3 c (c d x+d)^{5/2} (-cfx+f)^{5/2}}$$

Result(type 8, 28 leaves):

$$\int \frac{\sqrt{c d x+d}\, (a+b \arcsin(cx))}{(-cfx+f)^{5/2}} \, dx$$

Problem 144: Unable to integrate problem.

$$\int (c d x+d)^{5/2} (a+b \arcsin(cx))^2 \sqrt{-c e x+e} \, dx$$

Optimal(type 3, 523 leaves, 23 steps):

$$\frac{8 b^2 d^2 \sqrt{c d x+d} \sqrt{-c e x+e}}{9 c}-\frac{15 b^2 d^2 x \sqrt{c d x+d} \sqrt{-c e x+e}}{64}-\frac{b^2 c^2 d^2 x^3 \sqrt{c d x+d} \sqrt{-c e x+e}}{32}+\frac{4 b^2 d^2 (-c^2 x^2+1) \sqrt{c d x+d} \sqrt{-c e x+e}}{27 c}$$

$$+\frac{3 d^2 x (a+b \arcsin(cx))^2 \sqrt{c d x+d} \sqrt{-c e x+e}}{8}+\frac{c^2 d^2 x^3 (a+b \arcsin(cx))^2 \sqrt{c d x+d} \sqrt{-c e x+e}}{4}$$

$$-\frac{2 d^2 \left(-c^2 x^2+1\right) (a+b \arcsin(c x))^2 \sqrt{c d x+d}\, \sqrt{-c e x+e}}{3 c}+\frac{15 b^2 d^2 \arcsin(c x) \sqrt{c d x+d}\, \sqrt{-c e x+e}}{64 c \sqrt{-c^2 x^2+1}}$$
$$+\frac{4 b d^2 x (a+b \arcsin(c x)) \sqrt{c d x+d}\, \sqrt{-c e x+e}}{3 \sqrt{-c^2 x^2+1}}-\frac{3 b c d^2 x^2 (a+b \arcsin(c x)) \sqrt{c d x+d}\, \sqrt{-c e x+e}}{8 \sqrt{-c^2 x^2+1}}$$
$$-\frac{4 b c^2 d^2 x^3 (a+b \arcsin(c x)) \sqrt{c d x+d}\, \sqrt{-c e x+e}}{9 \sqrt{-c^2 x^2+1}}-\frac{b c^3 d^2 x^4 (a+b \arcsin(c x)) \sqrt{c d x+d}\, \sqrt{-c e x+e}}{8 \sqrt{-c^2 x^2+1}}$$
$$+\frac{5 d^2 (a+b \arcsin(c x))^3 \sqrt{c d x+d}\, \sqrt{-c e x+e}}{24 b c \sqrt{-c^2 x^2+1}}$$

Result(type 8, 30 leaves):

$$\int (c d x+d)^{5/2} (a+b \arcsin(c x))^2 \sqrt{-c e x+e}\, dx$$

Problem 145: Unable to integrate problem.

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

Optimal(type 3, 385 leaves, 13 steps):

$$\frac{4 b^2 d \sqrt{c d x+d}\, \sqrt{-c e x+e}}{9 c}-\frac{b^2 d x \sqrt{c d x+d}\, \sqrt{-c e x+e}}{4}+\frac{2 b^2 d \left(-c^2 x^2+1\right) \sqrt{c d x+d}\, \sqrt{-c e x+e}}{27 c}$$
$$+\frac{d x (a+b \arcsin(c x))^2 \sqrt{c d x+d}\, \sqrt{-c e x+e}}{2}-\frac{d \left(-c^2 x^2+1\right) (a+b \arcsin(c x))^2 \sqrt{c d x+d}\, \sqrt{-c e x+e}}{3 c}$$
$$+\frac{b^2 d \arcsin(c x) \sqrt{c d x+d}\, \sqrt{-c e x+e}}{4 c \sqrt{-c^2 x^2+1}}+\frac{2 b d x (a+b \arcsin(c x)) \sqrt{c d x+d}\, \sqrt{-c e x+e}}{3 \sqrt{-c^2 x^2+1}}-\frac{b c d x^2 (a+b \arcsin(c x)) \sqrt{c d x+d}\, \sqrt{-c e x+e}}{2 \sqrt{-c^2 x^2+1}}$$
$$-\frac{2 b c^2 d x^3 (a+b \arcsin(c x)) \sqrt{c d x+d}\, \sqrt{-c e x+e}}{9 \sqrt{-c^2 x^2+1}}+\frac{d (a+b \arcsin(c x))^3 \sqrt{c d x+d}\, \sqrt{-c e x+e}}{6 b c \sqrt{-c^2 x^2+1}}$$

Result(type 8, 30 leaves):

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

Problem 146: Unable to integrate problem.

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

Optimal(type 3, 306 leaves, 11 steps):

$$-\frac{b^2 x (c d x+d)^{3/2} (-c e x+e)^{3/2}}{32}-\frac{15 b^2 x (c d x+d)^{3/2} (-c e x+e)^{3/2}}{64 \left(-c^2 x^2+1\right)}+\frac{9 b^2 (c d x+d)^{3/2} (-c e x+e)^{3/2} \arcsin(c x)}{64 c \left(-c^2 x^2+1\right)^{3/2}}$$

$$-\frac{3 b c x^2 (c d x+d)^{3/2} (-c e x+e)^{3/2} (a+b\arcsin(c x))}{8 (-c^2 x^2+1)^{3/2}}+\frac{x (c d x+d)^{3/2} (-c e x+e)^{3/2} (a+b\arcsin(c x))^2}{4}$$
$$+\frac{3 x (c d x+d)^{3/2} (-c e x+e)^{3/2} (a+b\arcsin(c x))^2}{8 (-c^2 x^2+1)}+\frac{(c d x+d)^{3/2} (-c e x+e)^{3/2} (a+b\arcsin(c x))^3}{8 b c (-c^2 x^2+1)^{3/2}}$$
$$+\frac{b (c d x+d)^{3/2} (-c e x+e)^{3/2} (a+b\arcsin(c x)) \sqrt{-c^2 x^2+1}}{8 c}$$

Result(type 8, 30 leaves):

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

Problem 147: Unable to integrate problem.

$$\int (c d x+d)^{3/2} (-c e x+e)^{5/2} (a+b\arcsin(c x))^2 \, dx$$

Optimal(type 3, 593 leaves, 19 steps):

$$-\frac{8 b^2 e (c d x+d)^{3/2} (-c e x+e)^{3/2}}{225 c}-\frac{b^2 e x (c d x+d)^{3/2} (-c e x+e)^{3/2}}{32}-\frac{16 b^2 e (c d x+d)^{3/2} (-c e x+e)^{3/2}}{75 c (-c^2 x^2+1)}$$
$$-\frac{15 b^2 e x (c d x+d)^{3/2} (-c e x+e)^{3/2}}{64 (-c^2 x^2+1)}-\frac{2 b^2 e (c d x+d)^{3/2} (-c e x+e)^{3/2} (-c^2 x^2+1)}{125 c}+\frac{9 b^2 e (c d x+d)^{3/2} (-c e x+e)^{3/2} \arcsin(c x)}{64 c (-c^2 x^2+1)^{3/2}}$$
$$-\frac{2 b e x (c d x+d)^{3/2} (-c e x+e)^{3/2} (a+b\arcsin(c x))}{5 (-c^2 x^2+1)^{3/2}}-\frac{3 b c e x^2 (c d x+d)^{3/2} (-c e x+e)^{3/2} (a+b\arcsin(c x))}{8 (-c^2 x^2+1)^{3/2}}$$
$$+\frac{4 b c^2 e x^3 (c d x+d)^{3/2} (-c e x+e)^{3/2} (a+b\arcsin(c x))}{15 (-c^2 x^2+1)^{3/2}}-\frac{2 b c^4 e x^5 (c d x+d)^{3/2} (-c e x+e)^{3/2} (a+b\arcsin(c x))}{25 (-c^2 x^2+1)^{3/2}}$$
$$+\frac{e x (c d x+d)^{3/2} (-c e x+e)^{3/2} (a+b\arcsin(c x))^2}{4}+\frac{3 e x (c d x+d)^{3/2} (-c e x+e)^{3/2} (a+b\arcsin(c x))^2}{8 (-c^2 x^2+1)}$$
$$+\frac{e (c d x+d)^{3/2} (-c e x+e)^{3/2} (-c^2 x^2+1) (a+b\arcsin(c x))^2}{5 c}+\frac{e (c d x+d)^{3/2} (-c e x+e)^{3/2} (a+b\arcsin(c x))^3}{8 b c (-c^2 x^2+1)^{3/2}}$$
$$+\frac{b e (c d x+d)^{3/2} (-c e x+e)^{3/2} (a+b\arcsin(c x)) \sqrt{-c^2 x^2+1}}{8 c}$$

Result(type 8, 30 leaves):

$$\int (c d x+d)^{3/2} (-c e x+e)^{5/2} (a+b\arcsin(c x))^2 \, dx$$

Problem 148: Unable to integrate problem.

$$\int \frac{(-c e x+e)^{5/2} (a+b\arcsin(c x))^2}{(c d x+d)^{3/2}} \, dx$$

Optimal(type 4, 855 leaves, 28 steps):

$$\frac{8 a b e^4 x (-c^2 x^2+1)^{3/2}}{(c d x+d)^{3/2} (-c e x+e)^{3/2}}+\frac{8 b^2 e^4 (-c^2 x^2+1)^2}{c (c d x+d)^{3/2} (-c e x+e)^{3/2}}-\frac{b^2 e^4 x (-c^2 x^2+1)^2}{4 (c d x+d)^{3/2} (-c e x+e)^{3/2}}+\frac{b^2 e^4 (-c^2 x^2+1)^{3/2} \arcsin(c x)}{4 c (c d x+d)^{3/2} (-c e x+e)^{3/2}}$$
$$+\frac{8 b^2 e^4 x (-c^2 x^2+1)^{3/2} \arcsin(c x)}{(c d x+d)^{3/2} (-c e x+e)^{3/2}}-\frac{b c e^4 x^2 (-c^2 x^2+1)^{3/2} (a+b \arcsin(c x))}{2 (c d x+d)^{3/2} (-c e x+e)^{3/2}}-\frac{8 e^4 (-c^2 x^2+1) (a+b \arcsin(c x))^2}{c (c d x+d)^{3/2} (-c e x+e)^{3/2}}$$
$$+\frac{8 e^4 x (-c^2 x^2+1) (a+b \arcsin(c x))^2}{(c d x+d)^{3/2} (-c e x+e)^{3/2}}+\frac{16 I b^2 e^4 (-c^2 x^2+1)^{3/2} \operatorname{polylog}\left(2,-I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{c (c d x+d)^{3/2} (-c e x+e)^{3/2}}-\frac{4 e^4 (-c^2 x^2+1)^2 (a+b \arcsin(c x))^2}{c (c d x+d)^{3/2} (-c e x+e)^{3/2}}$$
$$+\frac{e^4 x (-c^2 x^2+1)^2 (a+b \arcsin(c x))^2}{2 (c d x+d)^{3/2} (-c e x+e)^{3/2}}-\frac{5 e^4 (-c^2 x^2+1)^{3/2} (a+b \arcsin(c x))^3}{2 b c (c d x+d)^{3/2} (-c e x+e)^{3/2}}-\frac{8 I e^4 (-c^2 x^2+1)^{3/2} (a+b \arcsin(c x))^2}{c (c d x+d)^{3/2} (-c e x+e)^{3/2}}$$
$$+\frac{16 b e^4 (-c^2 x^2+1)^{3/2} (a+b \arcsin(c x)) \ln\left(1+\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{c (c d x+d)^{3/2} (-c e x+e)^{3/2}}-\frac{8 I b^2 e^4 (-c^2 x^2+1)^{3/2} \operatorname{polylog}\left(2,-\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right)}{c (c d x+d)^{3/2} (-c e x+e)^{3/2}}$$
$$-\frac{32 I b e^4 (-c^2 x^2+1)^{3/2} (a+b \arcsin(c x)) \arctan\left(I c x+\sqrt{-c^2 x^2+1}\right)}{c (c d x+d)^{3/2} (-c e x+e)^{3/2}}-\frac{16 I b^2 e^4 (-c^2 x^2+1)^{3/2} \operatorname{polylog}\left(2,I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{c (c d x+d)^{3/2} (-c e x+e)^{3/2}}$$

Result(type 8, 30 leaves):

$$\int \frac{(-c e x+e)^{5/2} (a+b \arcsin(c x))^2}{(c d x+d)^{3/2}}\, dx$$

Problem 149: Unable to integrate problem.

$$\int \frac{(-c e x+e)^{5/2} (a+b \arcsin(c x))^2}{(c d x+d)^{5/2}}\, dx$$

Optimal(type 4, 637 leaves, 25 steps):

$$-\frac{2 a b e^5 x (-c^2 x^2+1)^{5/2}}{(c d x+d)^{5/2} (-c e x+e)^{5/2}}-\frac{2 b^2 e^5 (-c^2 x^2+1)^3}{c (c d x+d)^{5/2} (-c e x+e)^{5/2}}-\frac{2 b^2 e^5 x (-c^2 x^2+1)^{5/2} \arcsin(c x)}{(c d x+d)^{5/2} (-c e x+e)^{5/2}}+\frac{28 I e^5 (-c^2 x^2+1)^{5/2} (a+b \arcsin(c x))^2}{3 c (c d x+d)^{5/2} (-c e x+e)^{5/2}}$$
$$+\frac{e^5 (-c^2 x^2+1)^3 (a+b \arcsin(c x))^2}{c (c d x+d)^{5/2} (-c e x+e)^{5/2}}+\frac{5 e^5 (-c^2 x^2+1)^{5/2} (a+b \arcsin(c x))^3}{3 b c (c d x+d)^{5/2} (-c e x+e)^{5/2}}-\frac{16 b^2 e^5 (-c^2 x^2+1)^{5/2} \cot\left(\frac{\pi}{4}+\frac{\arcsin(c x)}{2}\right)}{3 c (c d x+d)^{5/2} (-c e x+e)^{5/2}}$$
$$+\frac{28 e^5 (-c^2 x^2+1)^{5/2} (a+b \arcsin(c x))^2 \cot\left(\frac{\pi}{4}+\frac{\arcsin(c x)}{2}\right)}{3 c (c d x+d)^{5/2} (-c e x+e)^{5/2}}-\frac{8 b e^5 (-c^2 x^2+1)^{5/2} (a+b \arcsin(c x)) \csc\left(\frac{\pi}{4}+\frac{\arcsin(c x)}{2}\right)^2}{3 c (c d x+d)^{5/2} (-c e x+e)^{5/2}}$$
$$-\frac{4 e^5 (-c^2 x^2+1)^{5/2} (a+b \arcsin(c x))^2 \cot\left(\frac{\pi}{4}+\frac{\arcsin(c x)}{2}\right) \csc\left(\frac{\pi}{4}+\frac{\arcsin(c x)}{2}\right)^2}{3 c (c d x+d)^{5/2} (-c e x+e)^{5/2}}$$
$$-\frac{112 b e^5 (-c^2 x^2+1)^{5/2} (a+b \arcsin(c x)) \ln\left(1-I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{3 c (c d x+d)^{5/2} (-c e x+e)^{5/2}}+\frac{112 I b^2 e^5 (-c^2 x^2+1)^{5/2} \operatorname{polylog}\left(2,I\left(I c x+\sqrt{-c^2 x^2+1}\right)\right)}{3 c (c d x+d)^{5/2} (-c e x+e)^{5/2}}$$

Result(type 8, 30 leaves):

$$\int \frac{(-cex+e)^{5/2}(a+b\arcsin(cx))^2}{(cdx+d)^{5/2}}\,dx$$

Problem 150: Unable to integrate problem.

$$\int \frac{(cdx+d)^{5/2}(a+b\arcsin(cx))^2}{\sqrt{-cex+e}}\,dx$$

Optimal(type 3, 483 leaves, 17 steps):

$$\frac{68 b^2 d^3 (-c^2x^2+1)}{9c\sqrt{cdx+d}\,\sqrt{-cex+e}} + \frac{3b^2d^3x(-c^2x^2+1)}{4\sqrt{cdx+d}\,\sqrt{-cex+e}} - \frac{2b^2d^3(-c^2x^2+1)^2}{27c\sqrt{cdx+d}\,\sqrt{-cex+e}} - \frac{11d^3(-c^2x^2+1)(a+b\arcsin(cx))^2}{3c\sqrt{cdx+d}\,\sqrt{-cex+e}}$$
$$- \frac{3d^3x(-c^2x^2+1)(a+b\arcsin(cx))^2}{2\sqrt{cdx+d}\,\sqrt{-cex+e}} - \frac{cd^3x^2(-c^2x^2+1)(a+b\arcsin(cx))^2}{3\sqrt{cdx+d}\,\sqrt{-cex+e}} - \frac{3b^2d^3\arcsin(cx)\sqrt{-c^2x^2+1}}{4c\sqrt{cdx+d}\,\sqrt{-cex+e}}$$
$$+ \frac{22bd^3x(a+b\arcsin(cx))\sqrt{-c^2x^2+1}}{3\sqrt{cdx+d}\,\sqrt{-cex+e}} + \frac{3bcd^3x^2(a+b\arcsin(cx))\sqrt{-c^2x^2+1}}{2\sqrt{cdx+d}\,\sqrt{-cex+e}} + \frac{2bc^2d^3x^3(a+b\arcsin(cx))\sqrt{-c^2x^2+1}}{9\sqrt{cdx+d}\,\sqrt{-cex+e}}$$
$$+ \frac{5d^3(a+b\arcsin(cx))^3\sqrt{-c^2x^2+1}}{6bc\sqrt{cdx+d}\,\sqrt{-cex+e}}$$

Result(type 8, 30 leaves):

$$\int \frac{(cdx+d)^{5/2}(a+b\arcsin(cx))^2}{\sqrt{-cex+e}}\,dx$$

Problem 151: Unable to integrate problem.

$$\int \frac{\sqrt{cdx+d}\,(a+b\arcsin(cx))^2}{\sqrt{-cex+e}}\,dx$$

Optimal(type 3, 203 leaves, 8 steps):

$$\frac{2b^2d(-c^2x^2+1)}{c\sqrt{cdx+d}\,\sqrt{-cex+e}} - \frac{d(-c^2x^2+1)(a+b\arcsin(cx))^2}{c\sqrt{cdx+d}\,\sqrt{-cex+e}} + \frac{2abdx\sqrt{-c^2x^2+1}}{\sqrt{cdx+d}\,\sqrt{-cex+e}} + \frac{2b^2dx\arcsin(cx)\sqrt{-c^2x^2+1}}{\sqrt{cdx+d}\,\sqrt{-cex+e}}$$
$$+ \frac{d(a+b\arcsin(cx))^3\sqrt{-c^2x^2+1}}{3bc\sqrt{cdx+d}\,\sqrt{-cex+e}}$$

Result(type 8, 30 leaves):

$$\int \frac{\sqrt{cdx+d}\,(a+b\arcsin(cx))^2}{\sqrt{-cex+e}}\,dx$$

Problem 152: Unable to integrate problem.

$$\int \frac{(a+b\arcsin(cx))^2}{\sqrt{cdx+d}\,\sqrt{-cex+e}}\,dx$$

Optimal(type 3, 47 leaves, 2 steps):

$$\frac{(a+b\arcsin(cx))^3\sqrt{-c^2x^2+1}}{3bc\sqrt{cdx+d}\,\sqrt{-cex+e}}$$

Result(type 8, 30 leaves):

$$\int \frac{(a+b\arcsin(cx))^2}{\sqrt{cdx+d}\,\sqrt{-cex+e}}\,dx$$

Problem 153: Unable to integrate problem.

$$\int \frac{(a+b\arcsin(cx))^2}{\sqrt{cdx+d}\,(-cex+e)^{3/2}}\,dx$$

Optimal(type 4, 447 leaves, 16 steps):

$$\frac{d\left(-c^2x^2+1\right)(a+b\arcsin(cx))^2}{c\,(cdx+d)^{3/2}(-cex+e)^{3/2}}+\frac{dx\left(-c^2x^2+1\right)(a+b\arcsin(cx))^2}{(cdx+d)^{3/2}(-cex+e)^{3/2}}-\frac{\mathrm{I}d\left(-c^2x^2+1\right)^{3/2}(a+b\arcsin(cx))^2}{c\,(cdx+d)^{3/2}(-cex+e)^{3/2}}$$
$$+\frac{4\mathrm{I}bd\left(-c^2x^2+1\right)^{3/2}(a+b\arcsin(cx))\arctan\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)}{c\,(cdx+d)^{3/2}(-cex+e)^{3/2}}+\frac{2bd\left(-c^2x^2+1\right)^{3/2}(a+b\arcsin(cx))\ln\left(1+\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)^2\right)}{c\,(cdx+d)^{3/2}(-cex+e)^{3/2}}$$
$$-\frac{2\mathrm{I}b^2d\left(-c^2x^2+1\right)^{3/2}\operatorname{polylog}\left(2,-\mathrm{I}\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\right)}{c\,(cdx+d)^{3/2}(-cex+e)^{3/2}}+\frac{2\mathrm{I}b^2d\left(-c^2x^2+1\right)^{3/2}\operatorname{polylog}\left(2,\mathrm{I}\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\right)}{c\,(cdx+d)^{3/2}(-cex+e)^{3/2}}$$
$$-\frac{\mathrm{I}b^2d\left(-c^2x^2+1\right)^{3/2}\operatorname{polylog}\left(2,-\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)^2\right)}{c\,(cdx+d)^{3/2}(-cex+e)^{3/2}}$$

Result(type 8, 30 leaves):

$$\int \frac{(a+b\arcsin(cx))^2}{\sqrt{cdx+d}\,(-cex+e)^{3/2}}\,dx$$

Problem 154: Unable to integrate problem.

$$\int \frac{\sqrt{cdx+d}\,(a+b\arcsin(cx))^2}{(-cex+e)^{5/2}}\,dx$$

Optimal(type 4, 426 leaves, 20 steps):

$$-\frac{I d^3 (-c^2x^2+1)^{5/2} (a+b\arcsin(cx))^2}{3c(cdx+d)^{5/2}(-cex+e)^{5/2}} - \frac{4bd^3(-c^2x^2+1)^{5/2}(a+b\arcsin(cx))\ln\left(1-\frac{I}{Icx+\sqrt{-c^2x^2+1}}\right)}{3c(cdx+d)^{5/2}(-cex+e)^{5/2}}$$
$$-\frac{4Ib^2d^3(-c^2x^2+1)^{5/2}\operatorname{polylog}\left(2,\frac{I}{Icx+\sqrt{-c^2x^2+1}}\right)}{3c(cdx+d)^{5/2}(-cex+e)^{5/2}} - \frac{2bd^3(-c^2x^2+1)^{5/2}(a+b\arcsin(cx))\sec\left(\frac{\pi}{4}+\frac{\arcsin(cx)}{2}\right)^2}{3c(cdx+d)^{5/2}(-cex+e)^{5/2}}$$
$$+\frac{4b^2d^3(-c^2x^2+1)^{5/2}\tan\left(\frac{\pi}{4}+\frac{\arcsin(cx)}{2}\right)}{3c(cdx+d)^{5/2}(-cex+e)^{5/2}} - \frac{d^3(-c^2x^2+1)^{5/2}(a+b\arcsin(cx))^2\tan\left(\frac{\pi}{4}+\frac{\arcsin(cx)}{2}\right)}{3c(cdx+d)^{5/2}(-cex+e)^{5/2}}$$
$$+\frac{d^3(-c^2x^2+1)^{5/2}(a+b\arcsin(cx))^2\sec\left(\frac{\pi}{4}+\frac{\arcsin(cx)}{2}\right)^2\tan\left(\frac{\pi}{4}+\frac{\arcsin(cx)}{2}\right)}{3c(cdx+d)^{5/2}(-cex+e)^{5/2}}$$

Result(type 8, 30 leaves):

$$\int\frac{\sqrt{cdx+d}\,(a+b\arcsin(cx))^2}{(-cex+e)^{5/2}}\,dx$$

Problem 155: Unable to integrate problem.

$$\int\frac{\sqrt{cdx+d}\,\sqrt{-cex+e}\,(a+b\arcsin(cx))^2}{x}\,dx$$

Optimal(type 4, 420 leaves, 13 steps):

$$-2b^2\sqrt{cdx+d}\,\sqrt{-cex+e}+(a+b\arcsin(cx))^2\sqrt{cdx+d}\,\sqrt{-cex+e}-\frac{2abcx\sqrt{cdx+d}\,\sqrt{-cex+e}}{\sqrt{-c^2x^2+1}}-\frac{2b^2cx\arcsin(cx)\sqrt{cdx+d}\,\sqrt{-cex+e}}{\sqrt{-c^2x^2+1}}$$
$$-\frac{2(a+b\arcsin(cx))^2\operatorname{arctanh}\left(Icx+\sqrt{-c^2x^2+1}\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{\sqrt{-c^2x^2+1}}$$
$$+\frac{2Ib(a+b\arcsin(cx))\operatorname{polylog}\left(2,-Icx-\sqrt{-c^2x^2+1}\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{\sqrt{-c^2x^2+1}}$$
$$-\frac{2Ib(a+b\arcsin(cx))\operatorname{polylog}\left(2,Icx+\sqrt{-c^2x^2+1}\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{\sqrt{-c^2x^2+1}}-\frac{2b^2\operatorname{polylog}\left(3,-Icx-\sqrt{-c^2x^2+1}\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{\sqrt{-c^2x^2+1}}$$
$$+\frac{2b^2\operatorname{polylog}\left(3,Icx+\sqrt{-c^2x^2+1}\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{\sqrt{-c^2x^2+1}}$$

Result(type 8, 33 leaves):

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

Problem 156: Unable to integrate problem.

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

Optimal(type 4, 210 leaves, 7 steps):

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

Result(type 8, 33 leaves):

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

Problem 157: Unable to integrate problem.

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

Optimal(type 4, 213 leaves, 7 steps):

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

Result(type 8, 30 leaves):

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

Problem 170: Result is not expressed in closed-form.

$$\int \frac{x^4\left(a+b\arcsin(c\,x)\right)}{e\,x^2+d}\,dx$$

Optimal(type 4, 597 leaves, 27 steps):

$$-\frac{a d x}{e^{2}}-\frac{b\left(-c^{2} x^{2}+1\right)^{3/2}}{9 c^{3} e}-\frac{b d x \arcsin(c x)}{e^{2}}+\frac{x^{3}(a+b \arcsin(c x))}{3 e}+\frac{(-d)^{3/2}(a+b \arcsin(c x)) \ln\left(1-\frac{\left(I c x+\sqrt{-c^{2} x^{2}+1}\right) \sqrt{e}}{I c \sqrt{-d}-\sqrt{c^{2} d+e}}\right)}{2 e^{5/2}}$$

$$-\frac{(-d)^{3/2}(a+b \arcsin(c x)) \ln\left(1+\frac{\left(I c x+\sqrt{-c^{2} x^{2}+1}\right) \sqrt{e}}{I c \sqrt{-d}-\sqrt{c^{2} d+e}}\right)}{2 e^{5/2}}+\frac{(-d)^{3/2}(a+b \arcsin(c x)) \ln\left(1-\frac{\left(I c x+\sqrt{-c^{2} x^{2}+1}\right) \sqrt{e}}{I c \sqrt{-d}+\sqrt{c^{2} d+e}}\right)}{2 e^{5/2}}$$

$$-\frac{(-d)^{3/2}(a+b \arcsin(c x)) \ln\left(1+\frac{\left(I c x+\sqrt{-c^{2} x^{2}+1}\right) \sqrt{e}}{I c \sqrt{-d}+\sqrt{c^{2} d+e}}\right)}{2 e^{5/2}}+\frac{I b(-d)^{3/2} \operatorname{polylog}\left(2,-\frac{\left(I c x+\sqrt{-c^{2} x^{2}+1}\right) \sqrt{e}}{I c \sqrt{-d}-\sqrt{c^{2} d+e}}\right)}{2 e^{5/2}}$$

$$-\frac{I b(-d)^{3/2} \operatorname{polylog}\left(2, \frac{\left(I c x+\sqrt{-c^{2} x^{2}+1}\right) \sqrt{e}}{I c \sqrt{-d}-\sqrt{c^{2} d+e}}\right)}{2 e^{5/2}}+\frac{I b(-d)^{3/2} \operatorname{polylog}\left(2,-\frac{\left(I c x+\sqrt{-c^{2} x^{2}+1}\right) \sqrt{e}}{I c \sqrt{-d}+\sqrt{c^{2} d+e}}\right)}{2 e^{5/2}}$$

$$-\frac{I b(-d)^{3/2} \operatorname{polylog}\left(2, \frac{\left(I c x+\sqrt{-c^{2} x^{2}+1}\right) \sqrt{e}}{I c \sqrt{-d}+\sqrt{c^{2} d+e}}\right)}{2 e^{5/2}}-\frac{b d \sqrt{-c^{2} x^{2}+1}}{c e^{2}}+\frac{b \sqrt{-c^{2} x^{2}+1}}{3 c^{3} e}$$

Result(type 7, 362 leaves):

$$\frac{a x^{3}}{3 e}-\frac{a d x}{e^{2}}+\frac{a d^{2} \arctan\left(\frac{x e}{\sqrt{d e}}\right)}{e^{2} \sqrt{d e}}-\frac{b d \sqrt{-c^{2} x^{2}+1}}{c e^{2}}+\frac{b \arcsin(c x) x^{3}}{3 e}+\frac{2 b \sqrt{-c^{2} x^{2}+1}}{9 c^{3} e}-\frac{b d x \arcsin(c x)}{e^{2}}$$

$$+\frac{c b d^{2}\left(\sum_{\_R1=\operatorname{RootOf}\left(e\_Z^{4}+\left(-4 c^{2} d-2 e\right)\_Z^{2}+e\right)} \frac{I \arcsin(c x) \ln\left(\frac{\_R1-I c x-\sqrt{-c^{2} x^{2}+1}}{\_R1}\right)+\operatorname{dilog}\left(\frac{\_R1-I c x-\sqrt{-c^{2} x^{2}+1}}{\_R1}\right)}{\_R1\left(\_R1^{2} e-2 c^{2} d-e\right)}\right)}{2 e^{2}}$$

$$+\frac{c b d^{2}\left(\sum_{\_R1=\operatorname{RootOf}\left(e\_Z^{4}+\left(-4 c^{2} d-2 e\right)\_Z^{2}+e\right)} \frac{\_R1\left(I \arcsin(c x) \ln\left(\frac{\_R1-I c x-\sqrt{-c^{2} x^{2}+1}}{\_R1}\right)+\operatorname{dilog}\left(\frac{\_R1-I c x-\sqrt{-c^{2} x^{2}+1}}{\_R1}\right)\right)}{\_R1^{2} e-2 c^{2} d-e}\right)}{2 e^{2}}$$

$$+\frac{b \sqrt{-c^{2} x^{2}+1}\, x^{2}}{9 c e}$$

Problem 171: Result is not expressed in closed-form.

$$\int \frac{a + b \arcsin(c x)}{x^4 (e x^2 + d)}\, dx$$

Optimal(type 4, 596 leaves, 29 steps):

$$\frac{-a - b \arcsin(c x)}{3 d x^3} + \frac{e (a + b \arcsin(c x))}{d^2 x} - \frac{b c^3 \operatorname{arctanh}\left(\sqrt{-c^2 x^2 + 1}\right)}{6 d} + \frac{b c e \operatorname{arctanh}\left(\sqrt{-c^2 x^2 + 1}\right)}{d^2}$$
$$+ \frac{e^{3/2} (a + b \arcsin(c x)) \ln\left(1 - \frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right)\sqrt{e}}{I c \sqrt{-d} - \sqrt{c^2 d + e}}\right)}{2 (-d)^{5/2}} - \frac{e^{3/2} (a + b \arcsin(c x)) \ln\left(1 + \frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right)\sqrt{e}}{I c \sqrt{-d} - \sqrt{c^2 d + e}}\right)}{2 (-d)^{5/2}}$$
$$+ \frac{e^{3/2} (a + b \arcsin(c x)) \ln\left(1 - \frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right)\sqrt{e}}{I c \sqrt{-d} + \sqrt{c^2 d + e}}\right)}{2 (-d)^{5/2}} - \frac{e^{3/2} (a + b \arcsin(c x)) \ln\left(1 + \frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right)\sqrt{e}}{I c \sqrt{-d} + \sqrt{c^2 d + e}}\right)}{2 (-d)^{5/2}}$$
$$+ \frac{I b e^{3/2} \operatorname{polylog}\left(2, -\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right)\sqrt{e}}{I c \sqrt{-d} - \sqrt{c^2 d + e}}\right)}{2 (-d)^{5/2}} - \frac{I b e^{3/2} \operatorname{polylog}\left(2, \frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right)\sqrt{e}}{I c \sqrt{-d} - \sqrt{c^2 d + e}}\right)}{2 (-d)^{5/2}}$$
$$+ \frac{I b e^{3/2} \operatorname{polylog}\left(2, -\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right)\sqrt{e}}{I c \sqrt{-d} + \sqrt{c^2 d + e}}\right)}{2 (-d)^{5/2}} - \frac{I b e^{3/2} \operatorname{polylog}\left(2, \frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right)\sqrt{e}}{I c \sqrt{-d} + \sqrt{c^2 d + e}}\right)}{2 (-d)^{5/2}} - \frac{b c \sqrt{-c^2 x^2 + 1}}{6 d x^2}$$

Result(type 7, 471 leaves):

$$\frac{a e^2 \arctan\left(\frac{x e}{\sqrt{d e}}\right)}{d^2 \sqrt{d e}} - \frac{a}{3 d x^3} + \frac{a e}{d^2 x} - \frac{b c \sqrt{-c^2 x^2 + 1}}{6 d x^2} + \frac{b \arcsin(c x) e}{d^2 x} - \frac{b \arcsin(c x)}{3 d x^3}$$
$$- \frac{1}{8 c d^3} \left(b e^2 \left(\sum_{\_R1 = RootOf(e \_Z^4 + (-4 c^2 d - 2 e) \_Z^2 + e)} \frac{(\_R1^2 e - 4 c^2 d - e)\left(I \arcsin(c x) \ln\left(\frac{\_R1 - I c x - \sqrt{-c^2 x^2 + 1}}{\_R1}\right) + \operatorname{dilog}\left(\frac{\_R1 - I c x - \sqrt{-c^2 x^2 + 1}}{\_R1}\right)\right)}{\_R1 (\_R1^2 e - 2 c^2 d - e)} \right) \right)$$
$$- \frac{c^3 b \ln\left(1 + I c x + \sqrt{-c^2 x^2 + 1}\right)}{6 d} + \frac{c^3 b \ln\left(I c x + \sqrt{-c^2 x^2 + 1} - 1\right)}{6 d}$$
$$+ \frac{1}{8 c d^3} \left(b e^2 \left(\right.\right.$$

$$\sum_{\_R1=RootOf(e\_Z^4+(-4c^2d-2e)\_Z^2+e)} \frac{(4\_R1^2c^2d+\_R1^2e-e)\left(\mathrm{I}\arcsin(cx)\ln\left(\frac{\_R1-\mathrm{I}cx-\sqrt{-c^2x^2+1}}{\_R1}\right)+\mathrm{dilog}\left(\frac{\_R1-\mathrm{I}cx-\sqrt{-c^2x^2+1}}{\_R1}\right)\right)}{\_R1(\_R1^2e-2c^2d-e)}\Bigg)\Bigg)$$

$$+\frac{cbe\ln\left(1+\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)}{d^2}-\frac{cbe\ln\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}-1\right)}{d^2}$$

Problem 172: Result is not expressed in closed-form.

$$\int\frac{a+b\arcsin(cx)}{(ex^2+d)^2}\,dx$$

Optimal(type 4, 672 leaves, 26 steps):

$$-\frac{(a+b\arcsin(cx))\ln\left(1-\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}-\sqrt{c^2d+e}}\right)}{4(-d)^{3/2}\sqrt{e}}+\frac{(a+b\arcsin(cx))\ln\left(1+\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}-\sqrt{c^2d+e}}\right)}{4(-d)^{3/2}\sqrt{e}}$$

$$-\frac{(a+b\arcsin(cx))\ln\left(1-\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}+\sqrt{c^2d+e}}\right)}{4(-d)^{3/2}\sqrt{e}}+\frac{(a+b\arcsin(cx))\ln\left(1+\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}+\sqrt{c^2d+e}}\right)}{4(-d)^{3/2}\sqrt{e}}$$

$$-\frac{\mathrm{I}b\,\mathrm{polylog}\left(2,-\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}-\sqrt{c^2d+e}}\right)}{4(-d)^{3/2}\sqrt{e}}+\frac{\mathrm{I}b\,\mathrm{polylog}\left(2,\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}-\sqrt{c^2d+e}}\right)}{4(-d)^{3/2}\sqrt{e}}-\frac{\mathrm{I}b\,\mathrm{polylog}\left(2,-\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}+\sqrt{c^2d+e}}\right)}{4(-d)^{3/2}\sqrt{e}}$$

$$+\frac{\mathrm{I}b\,\mathrm{polylog}\left(2,\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}+\sqrt{c^2d+e}}\right)}{4(-d)^{3/2}\sqrt{e}}+\frac{-a-b\arcsin(cx)}{4d\sqrt{e}\left(\sqrt{-d}-x\sqrt{e}\right)}+\frac{a+b\arcsin(cx)}{4d\sqrt{e}\left(\sqrt{-d}+x\sqrt{e}\right)}+\frac{bc\,\mathrm{arctanh}\left(\frac{-c^2x\sqrt{-d}+\sqrt{e}}{\sqrt{c^2d+e}\sqrt{-c^2x^2+1}}\right)}{4d\sqrt{e}\sqrt{c^2d+e}}$$

$$+\frac{bc\,\mathrm{arctanh}\left(\frac{c^2x\sqrt{-d}+\sqrt{e}}{\sqrt{c^2d+e}\sqrt{-c^2x^2+1}}\right)}{4d\sqrt{e}\sqrt{c^2d+e}}$$

Result(type 7, 1686 leaves):

$$\frac{c^2ax}{2d(c^2ex^2+c^2d)}+\frac{a\arctan\left(\frac{xe}{\sqrt{de}}\right)}{2d\sqrt{de}}+\frac{c^2b\arcsin(cx)x}{2d(c^2ex^2+c^2d)}$$

$$- \frac{c^5 b \sqrt{-\left(2 c^2 d - 2\sqrt{(c^2 d + e) c^2 d} + e\right) e} \arctan\left(\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) e}{\sqrt{\left(-2 c^2 d + 2\sqrt{(c^2 d + e) c^2 d} - e\right) e}}\right) d}{(c^2 d + e) e^3}$$

$$- \frac{c^3 b \sqrt{-\left(2 c^2 d - 2\sqrt{(c^2 d + e) c^2 d} + e\right) e} \arctan\left(\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) e}{\sqrt{\left(-2 c^2 d + 2\sqrt{(c^2 d + e) c^2 d} - e\right) e}}\right) \sqrt{(c^2 d + e) c^2 d}}{(c^2 d + e) e^3}$$

$$- \frac{c^3 b \sqrt{-\left(2 c^2 d - 2\sqrt{(c^2 d + e) c^2 d} + e\right) e} \arctan\left(\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) e}{\sqrt{\left(-2 c^2 d + 2\sqrt{(c^2 d + e) c^2 d} - e\right) e}}\right)}{(c^2 d + e) e^2}$$

$$- \frac{c b \sqrt{-\left(2 c^2 d - 2\sqrt{(c^2 d + e) c^2 d} + e\right) e} \arctan\left(\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) e}{\sqrt{\left(-2 c^2 d + 2\sqrt{(c^2 d + e) c^2 d} - e\right) e}}\right) \sqrt{(c^2 d + e) c^2 d}}{2 (c^2 d + e) d e^2}$$

$$+ \frac{c^3 b \sqrt{-\left(2 c^2 d - 2\sqrt{(c^2 d + e) c^2 d} + e\right) e} \arctan\left(\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) e}{\sqrt{\left(-2 c^2 d + 2\sqrt{(c^2 d + e) c^2 d} - e\right) e}}\right)}{e^3}$$

$$+ \frac{c b \sqrt{-\left(2 c^2 d - 2\sqrt{(c^2 d + e) c^2 d} + e\right) e} \arctan\left(\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) e}{\sqrt{\left(-2 c^2 d + 2\sqrt{(c^2 d + e) c^2 d} - e\right) e}}\right) \sqrt{(c^2 d + e) c^2 d}}{d e^3}$$

$$+ \frac{c b \sqrt{-\left(2 c^2 d - 2\sqrt{(c^2 d + e) c^2 d} + e\right) e} \arctan\left(\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) e}{\sqrt{\left(-2 c^2 d + 2\sqrt{(c^2 d + e) c^2 d} - e\right) e}}\right)}{2 d e^2}$$

$$- \frac{c^5 b \sqrt{\left(2 c^2 d + 2\sqrt{(c^2 d + e) c^2 d} + e\right) e} \operatorname{arctanh}\left(\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) e}{\sqrt{\left(2 c^2 d + 2\sqrt{(c^2 d + e) c^2 d} + e\right) e}}\right) d}{(c^2 d + e) e^3}$$

$$+ \frac{c^3 b \sqrt{\left(2 c^2 d + 2\sqrt{(c^2 d + e) c^2 d} + e\right) e} \operatorname{arctanh}\left(\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) e}{\sqrt{\left(2 c^2 d + 2\sqrt{(c^2 d + e) c^2 d} + e\right) e}}\right) \sqrt{(c^2 d + e) c^2 d}}{(c^2 d + e) e^3}$$

$$- \frac{c^3 b \sqrt{\left(2 c^2 d + 2 \sqrt{(c^2 d + e) c^2 d} + e\right) e}\, \operatorname{arctanh}\left(\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) e}{\sqrt{\left(2 c^2 d + 2 \sqrt{(c^2 d + e) c^2 d} + e\right) e}}\right)}{(c^2 d + e) e^2}$$

$$+ \frac{c b \sqrt{\left(2 c^2 d + 2 \sqrt{(c^2 d + e) c^2 d} + e\right) e}\, \operatorname{arctanh}\left(\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) e}{\sqrt{\left(2 c^2 d + 2 \sqrt{(c^2 d + e) c^2 d} + e\right) e}}\right) \sqrt{(c^2 d + e) c^2 d}}{2 (c^2 d + e) d e^2}$$

$$+ \frac{c^3 b \sqrt{\left(2 c^2 d + 2 \sqrt{(c^2 d + e) c^2 d} + e\right) e}\, \operatorname{arctanh}\left(\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) e}{\sqrt{\left(2 c^2 d + 2 \sqrt{(c^2 d + e) c^2 d} + e\right) e}}\right)}{e^3}$$

$$- \frac{c b \sqrt{\left(2 c^2 d + 2 \sqrt{(c^2 d + e) c^2 d} + e\right) e}\, \operatorname{arctanh}\left(\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) e}{\sqrt{\left(2 c^2 d + 2 \sqrt{(c^2 d + e) c^2 d} + e\right) e}}\right) \sqrt{(c^2 d + e) c^2 d}}{d e^3}$$

$$+ \frac{c b \sqrt{\left(2 c^2 d + 2 \sqrt{(c^2 d + e) c^2 d} + e\right) e}\, \operatorname{arctanh}\left(\frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) e}{\sqrt{\left(2 c^2 d + 2 \sqrt{(c^2 d + e) c^2 d} + e\right) e}}\right)}{2 d e^2}$$

$$+ \frac{c b \left(\sum_{\_R1 = RootOf(e\_Z^4 + (-4 c^2 d - 2 e)\_Z^2 + e)} \frac{I \arcsin(c x) \ln\left(\frac{\_R1 - I c x - \sqrt{-c^2 x^2 + 1}}{\_R1}\right) + \operatorname{dilog}\left(\frac{\_R1 - I c x - \sqrt{-c^2 x^2 + 1}}{\_R1}\right)}{\_R1 \left(\_R1^2 e - 2 c^2 d - e\right)}\right)}{4 d}$$

$$+ \frac{c b \left(\sum_{\_R1 = RootOf(e\_Z^4 + (-4 c^2 d - 2 e)\_Z^2 + e)} \frac{\_R1 \left(I \arcsin(c x) \ln\left(\frac{\_R1 - I c x - \sqrt{-c^2 x^2 + 1}}{\_R1}\right) + \operatorname{dilog}\left(\frac{\_R1 - I c x - \sqrt{-c^2 x^2 + 1}}{\_R1}\right)\right)}{\_R1^2 e - 2 c^2 d - e}\right)}{4 d}$$

Problem 173: Result more than twice size of optimal antiderivative.

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

Optimal(type 3, 118 leaves, 4 steps):

$$\frac{-a - b \arcsin(c x)}{4 e (e x^2 + d)^2} + \frac{b c (2 c^2 d + e) \arctan\left(\frac{x \sqrt{c^2 d + e}}{\sqrt{d} \sqrt{-c^2 x^2 + 1}}\right)}{8 d^{3/2} e (c^2 d + e)^{3/2}} + \frac{b c x \sqrt{-c^2 x^2 + 1}}{8 d (c^2 d + e) (e x^2 + d)}$$

```
Result(type 3, 1016 leaves):
```

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

$$
+ \frac{1}{16 e^2 d \left(c^2 d + e\right) \sqrt{\frac{c^2 d + e}{e}}} \left(c^2 b \sqrt{-c^2 e d}\, \ln\left(\frac{1}{c x - \frac{\sqrt{-c^2 e d}}{e}} \left(\frac{2 \left(c^2 d + e\right)}{e} - \frac{2 \sqrt{-c^2 e d} \left(c x - \frac{\sqrt{-c^2 e d}}{e}\right)}{e} \right.\right.\right.
$$

$$
\left.\left.\left. + 2 \sqrt{\frac{c^2 d + e}{e}} \sqrt{-\left(c x - \frac{\sqrt{-c^2 e d}}{e}\right)^2 - \frac{2 \sqrt{-c^2 e d} \left(c x - \frac{\sqrt{-c^2 e d}}{e}\right)}{e} + \frac{c^2 d + e}{e}}\right)\right)\right)
$$

$$
+ \frac{c^2 b \sqrt{-\left(c x + \frac{\sqrt{-c^2 e d}}{e}\right)^2 + \frac{2 \sqrt{-c^2 e d} \left(c x + \frac{\sqrt{-c^2 e d}}{e}\right)}{e} + \frac{c^2 d + e}{e}}}{16 e d \left(c^2 d + e\right) \left(c x + \frac{\sqrt{-c^2 e d}}{e}\right)}
$$

$$
- \frac{1}{16 e^2 d \left(c^2 d + e\right) \sqrt{\frac{c^2 d + e}{e}}} \left(c^2 b \sqrt{-c^2 e d}\, \ln\left(\frac{1}{c x + \frac{\sqrt{-c^2 e d}}{e}} \left(\frac{2 \left(c^2 d + e\right)}{e} + \frac{2 \sqrt{-c^2 e d} \left(c x + \frac{\sqrt{-c^2 e d}}{e}\right)}{e} \right.\right.\right.
$$

$$
\left.\left.\left. + 2 \sqrt{\frac{c^2 d + e}{e}} \sqrt{-\left(c x + \frac{\sqrt{-c^2 e d}}{e}\right)^2 + \frac{2 \sqrt{-c^2 e d} \left(c x + \frac{\sqrt{-c^2 e d}}{e}\right)}{e} + \frac{c^2 d + e}{e}}\right)\right)\right)
$$

$$-\frac{c^2 b \ln\left(\frac{\frac{2(c^2 d+e)}{e} - \frac{2\sqrt{-c^2 e d}\left(cx - \frac{\sqrt{-c^2 e d}}{e}\right)}{e} + 2\sqrt{\frac{c^2 d+e}{e}}\sqrt{-\left(cx - \frac{\sqrt{-c^2 e d}}{e}\right)^2 - \frac{2\sqrt{-c^2 e d}\left(cx - \frac{\sqrt{-c^2 e d}}{e}\right)}{e} + \frac{c^2 d+e}{e}}}{cx - \frac{\sqrt{-c^2 e d}}{e}}\right)}{16 e d\sqrt{-c^2 e d}\sqrt{\frac{c^2 d+e}{e}}}$$

$$+\frac{c^2 b \ln\left(\frac{\frac{2(c^2 d+e)}{e} + \frac{2\sqrt{-c^2 e d}\left(cx + \frac{\sqrt{-c^2 e d}}{e}\right)}{e} + 2\sqrt{\frac{c^2 d+e}{e}}\sqrt{-\left(cx + \frac{\sqrt{-c^2 e d}}{e}\right)^2 + \frac{2\sqrt{-c^2 e d}\left(cx + \frac{\sqrt{-c^2 e d}}{e}\right)}{e} + \frac{c^2 d+e}{e}}}{cx + \frac{\sqrt{-c^2 e d}}{e}}\right)}{16 e d\sqrt{-c^2 e d}\sqrt{\frac{c^2 d+e}{e}}}$$

Problem 174: Unable to integrate problem.

$$\int \frac{a + b\arcsin(cx)}{(ex^2+d)^{3/2}}\, dx$$

Optimal(type 3, 60 leaves, 6 steps):

$$\frac{b \arctan\left(\frac{\sqrt{e}\sqrt{-c^2x^2+1}}{c\sqrt{ex^2+d}}\right)}{d\sqrt{e}} + \frac{x(a + b\arcsin(cx))}{d\sqrt{ex^2+d}}$$

Result(type 8, 20 leaves):

$$\int \frac{a + b\arcsin(cx)}{(ex^2+d)^{3/2}}\, dx$$

Problem 175: Unable to integrate problem.

$$\int (fx)^m (ex^2+d)(a + b\arcsin(cx))\, dx$$

Optimal(type 5, 155 leaves, 4 steps):

$$\frac{d(fx)^{1+m}(a + b\arcsin(cx))}{f(1+m)} + \frac{e(fx)^{3+m}(a + b\arcsin(cx))}{f^3(3+m)}$$

$$-\frac{b\left(e(1+m)(2+m)+c^2 d(3+m)^2\right)(fx)^{2+m}\,\mathrm{hypergeom}\left(\left[\frac{1}{2},1+\frac{m}{2}\right],\left[2+\frac{m}{2}\right],c^2x^2\right)}{cf^2(1+m)(2+m)(3+m)^2}+\frac{be(fx)^{2+m}\sqrt{-c^2x^2+1}}{cf^2(3+m)^2}$$

Result(type 8, 23 leaves):

$$\int (fx)^m\left(ex^2+d\right)(a+b\arcsin(cx))\,dx$$

Problem 178: Unable to integrate problem.

$$\int \frac{(a+b\arcsin(cx))^2}{ex^2+d}\,dx$$

Optimal(type 4, 773 leaves, 22 steps):

$$\frac{(a+b\arcsin(cx))^2\ln\left(1-\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{(a+b\arcsin(cx))^2\ln\left(1+\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2\sqrt{-d}\sqrt{e}}$$

$$+\frac{(a+b\arcsin(cx))^2\ln\left(1-\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}+\sqrt{c^2d+e}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{(a+b\arcsin(cx))^2\ln\left(1+\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}+\sqrt{c^2d+e}}\right)}{2\sqrt{-d}\sqrt{e}}$$

$$+\frac{\mathrm{I}b(a+b\arcsin(cx))\,\mathrm{polylog}\left(2,-\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}-\sqrt{c^2d+e}}\right)}{\sqrt{-d}\sqrt{e}}-\frac{\mathrm{I}b(a+b\arcsin(cx))\,\mathrm{polylog}\left(2,\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}-\sqrt{c^2d+e}}\right)}{\sqrt{-d}\sqrt{e}}$$

$$+\frac{\mathrm{I}b(a+b\arcsin(cx))\,\mathrm{polylog}\left(2,-\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}+\sqrt{c^2d+e}}\right)}{\sqrt{-d}\sqrt{e}}-\frac{\mathrm{I}b(a+b\arcsin(cx))\,\mathrm{polylog}\left(2,\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}+\sqrt{c^2d+e}}\right)}{\sqrt{-d}\sqrt{e}}$$

$$-\frac{b^2\,\mathrm{polylog}\left(3,-\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}-\sqrt{c^2d+e}}\right)}{\sqrt{-d}\sqrt{e}}+\frac{b^2\,\mathrm{polylog}\left(3,\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}-\sqrt{c^2d+e}}\right)}{\sqrt{-d}\sqrt{e}}-\frac{b^2\,\mathrm{polylog}\left(3,-\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}+\sqrt{c^2d+e}}\right)}{\sqrt{-d}\sqrt{e}}$$

$$+\frac{b^2\,\mathrm{polylog}\left(3,\frac{\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)\sqrt{e}}{\mathrm{I}c\sqrt{-d}+\sqrt{c^2d+e}}\right)}{\sqrt{-d}\sqrt{e}}$$

Result(type 8, 22 leaves):

$$\int \frac{(a+b\arcsin(cx))^2}{ex^2+d}\,dx$$

Problem 186: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 374 leaves, 32 steps):

$$d x (a + b \arcsin(c x))^{3/2} + \frac{e x^3 (a + b \arcsin(c x))^{3/2}}{3} + \frac{b^{3/2} e \cos\left(\frac{3 a}{b}\right) \mathrm{FresnelC}\left(\frac{\sqrt{6} \sqrt{a + b \arcsin(c x)}}{\sqrt{\pi} \sqrt{b}}\right) \sqrt{6} \sqrt{\pi}}{144 c^3}$$
$$+ \frac{b^{3/2} e \,\mathrm{FresnelS}\left(\frac{\sqrt{6} \sqrt{a + b \arcsin(c x)}}{\sqrt{\pi} \sqrt{b}}\right) \sin\left(\frac{3 a}{b}\right) \sqrt{6} \sqrt{\pi}}{144 c^3} - \frac{3 b^{3/2} d \cos\left(\frac{a}{b}\right) \mathrm{FresnelC}\left(\frac{\sqrt{2} \sqrt{a + b \arcsin(c x)}}{\sqrt{\pi} \sqrt{b}}\right) \sqrt{2} \sqrt{\pi}}{4 c}$$
$$- \frac{3 b^{3/2} e \cos\left(\frac{a}{b}\right) \mathrm{FresnelC}\left(\frac{\sqrt{2} \sqrt{a + b \arcsin(c x)}}{\sqrt{\pi} \sqrt{b}}\right) \sqrt{2} \sqrt{\pi}}{16 c^3} - \frac{3 b^{3/2} d \,\mathrm{FresnelS}\left(\frac{\sqrt{2} \sqrt{a + b \arcsin(c x)}}{\sqrt{\pi} \sqrt{b}}\right) \sin\left(\frac{a}{b}\right) \sqrt{2} \sqrt{\pi}}{4 c}$$
$$- \frac{3 b^{3/2} e \,\mathrm{FresnelS}\left(\frac{\sqrt{2} \sqrt{a + b \arcsin(c x)}}{\sqrt{\pi} \sqrt{b}}\right) \sin\left(\frac{a}{b}\right) \sqrt{2} \sqrt{\pi}}{16 c^3} + \frac{3 b d \sqrt{-c^2 x^2 + 1} \sqrt{a + b \arcsin(c x)}}{2 c} + \frac{b e \sqrt{-c^2 x^2 + 1} \sqrt{a + b \arcsin(c x)}}{3 c^3}$$
$$+ \frac{b e x^2 \sqrt{-c^2 x^2 + 1} \sqrt{a + b \arcsin(c x)}}{6 c}$$

Result(type 4, 836 leaves):

$$-\frac{1}{144 c^3 \sqrt{a + b \arcsin(c x)}} \Bigg(108 \sin\left(\frac{a}{b}\right) \sqrt{2} \,\mathrm{FresnelS}\left(\frac{\sqrt{2} \sqrt{a + b \arcsin(c x)}}{\sqrt{\pi} \sqrt{\frac{1}{b}}\, b}\right) \sqrt{a + b \arcsin(c x)} \sqrt{\pi} \sqrt{\frac{1}{b}}\, b^2 c^2 d$$
$$+ 108 \cos\left(\frac{a}{b}\right) \sqrt{2} \,\mathrm{FresnelC}\left(\frac{\sqrt{2} \sqrt{a + b \arcsin(c x)}}{\sqrt{\pi} \sqrt{\frac{1}{b}}\, b}\right) \sqrt{a + b \arcsin(c x)} \sqrt{\pi} \sqrt{\frac{1}{b}}\, b^2 c^2 d$$
$$- \sqrt{2} \sin\left(\frac{3 a}{b}\right) \mathrm{FresnelS}\left(\frac{\sqrt{2} \sqrt{3} \sqrt{a + b \arcsin(c x)}}{\sqrt{\pi} \sqrt{\frac{1}{b}}\, b}\right) \sqrt{a + b \arcsin(c x)} \sqrt{\pi} \sqrt{3} \sqrt{\frac{1}{b}}\, b^2 e$$
$$- \sqrt{2} \cos\left(\frac{3 a}{b}\right) \mathrm{FresnelC}\left(\frac{\sqrt{2} \sqrt{3} \sqrt{a + b \arcsin(c x)}}{\sqrt{\pi} \sqrt{\frac{1}{b}}\, b}\right) \sqrt{a + b \arcsin(c x)} \sqrt{\pi} \sqrt{3} \sqrt{\frac{1}{b}}\, b^2 e$$
$$+ 27 \sin\left(\frac{a}{b}\right) \sqrt{2} \,\mathrm{FresnelS}\left(\frac{\sqrt{2} \sqrt{a + b \arcsin(c x)}}{\sqrt{\pi} \sqrt{\frac{1}{b}}\, b}\right) \sqrt{a + b \arcsin(c x)} \sqrt{\pi} \sqrt{\frac{1}{b}}\, b^2 e$$

$$+ 27\cos\left(\frac{a}{b}\right)\sqrt{2}\,\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)\sqrt{a+b\arcsin(cx)}\,\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b^2 e - 144\arcsin(cx)^2\sin\left(\frac{a+b\arcsin(cx)}{b}-\frac{a}{b}\right)b^2c^2d$$

$$- 288\arcsin(cx)\sin\left(\frac{a+b\arcsin(cx)}{b}-\frac{a}{b}\right)a\,b\,c^2d - 216\arcsin(cx)\cos\left(\frac{a+b\arcsin(cx)}{b}-\frac{a}{b}\right)b^2c^2d + 12\arcsin(cx)^2\sin\left(\frac{3\,(a+b\arcsin(cx))}{b}\right.$$

$$\left.-\frac{3a}{b}\right)b^2e - 36\arcsin(cx)^2\sin\left(\frac{a+b\arcsin(cx)}{b}-\frac{a}{b}\right)b^2e - 144\sin\left(\frac{a+b\arcsin(cx)}{b}-\frac{a}{b}\right)a^2c^2d - 216\cos\left(\frac{a+b\arcsin(cx)}{b}-\frac{a}{b}\right)a\,b\,c^2d$$

$$+ 24\arcsin(cx)\sin\left(\frac{3\,(a+b\arcsin(cx))}{b}-\frac{3a}{b}\right)a\,b\,e - 72\arcsin(cx)\sin\left(\frac{a+b\arcsin(cx)}{b}-\frac{a}{b}\right)a\,b\,e - 54\arcsin(cx)\cos\left(\frac{a+b\arcsin(cx)}{b}\right.$$

$$\left.-\frac{a}{b}\right)b^2e + 6\arcsin(cx)\cos\left(\frac{3\,(a+b\arcsin(cx))}{b}-\frac{3a}{b}\right)b^2e + 12\sin\left(\frac{3\,(a+b\arcsin(cx))}{b}-\frac{3a}{b}\right)a^2e - 36\sin\left(\frac{a+b\arcsin(cx)}{b}-\frac{a}{b}\right)a^2e$$

$$- 54\cos\left(\frac{a+b\arcsin(cx)}{b}-\frac{a}{b}\right)a\,b\,e + 6\cos\left(\frac{3\,(a+b\arcsin(cx))}{b}-\frac{3a}{b}\right)a\,b\,e\Big)$$

Test results for the 131 problems in "5.1.5 Inverse sine functions.txt"

Problem 3: Result more than twice size of optimal antiderivative.

$$\int \frac{a+b\arcsin(cx)}{(ex+d)^3}\,dx$$

Optimal(type 3, 124 leaves, 4 steps):

$$\frac{-a-b\arcsin(cx)}{2e\,(ex+d)^2}+\frac{b\,c^3d\arctan\left(\frac{c^2dx+e}{\sqrt{d^2c^2-e^2}\,\sqrt{-c^2x^2+1}}\right)}{2e\,(d^2c^2-e^2)^{3/2}}+\frac{b\,c\sqrt{-c^2x^2+1}}{2\,(d^2c^2-e^2)\,(ex+d)}$$

Result(type 3, 300 leaves):

$$-\frac{c^2a}{2\,(cex+cd)^2e}-\frac{c^2b\arcsin(cx)}{2\,(cex+cd)^2e}+\frac{c^2b\sqrt{-\left(cx+\frac{cd}{e}\right)^2+\frac{2cd\left(cx+\frac{cd}{e}\right)}{e}-\frac{d^2c^2-e^2}{e^2}}}{2e\,(d^2c^2-e^2)\left(cx+\frac{cd}{e}\right)}$$

$$-\frac{c^3b\,d\ln\left(\frac{-\frac{2\,(d^2c^2-e^2)}{e^2}+\frac{2cd\left(cx+\frac{cd}{e}\right)}{e}+2\sqrt{-\frac{d^2c^2-e^2}{e^2}}\sqrt{-\left(cx+\frac{cd}{e}\right)^2+\frac{2cd\left(cx+\frac{cd}{e}\right)}{e}-\frac{d^2c^2-e^2}{e^2}}}{cx+\frac{cd}{e}}\right)}{2e^2\,(d^2c^2-e^2)\sqrt{-\frac{d^2c^2-e^2}{e^2}}}$$

```
Problem 5: Result more than twice size of optimal antiderivative.
```

$$\int \frac{(a+b\arcsin(cx))^2}{(ex+d)^3}\, dx$$

```
Optimal(type 4, 407 leaves, 13 steps):
```

$$-\frac{(a+b\arcsin(cx))^2}{2e(ex+d)^2} - \frac{b^2c^2\ln(ex+d)}{e(d^2c^2-e^2)} - \frac{I b c^3 d (a+b\arcsin(cx)) \ln\left(1-\frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd-\sqrt{d^2c^2-e^2}}\right)}{e(d^2c^2-e^2)^{3/2}}$$
$$+\frac{I b c^3 d (a+b\arcsin(cx)) \ln\left(1-\frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd+\sqrt{d^2c^2-e^2}}\right)}{e(d^2c^2-e^2)^{3/2}} - \frac{b^2c^3 d\,\mathrm{polylog}\left(2, \frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd-\sqrt{d^2c^2-e^2}}\right)}{e(d^2c^2-e^2)^{3/2}}$$
$$+\frac{b^2c^3 d\,\mathrm{polylog}\left(2, \frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd+\sqrt{d^2c^2-e^2}}\right)}{e(d^2c^2-e^2)^{3/2}} + \frac{bc(a+b\arcsin(cx))\sqrt{-c^2x^2+1}}{(d^2c^2-e^2)(ex+d)}$$

```
Result(type 4, 1172 leaves):
```

$$-\frac{c^2a^2}{2(cex+cd)^2 e} - \frac{I c^3 b^2 \sqrt{-d^2c^2+e^2}\, d\,\mathrm{dilog}\left(\frac{I c d+e\left(I c x+\sqrt{-c^2x^2+1}\right)+\sqrt{-d^2c^2+e^2}}{I c d+\sqrt{-d^2c^2+e^2}}\right)}{(d^2c^2-e^2)^2 e} - \frac{I c^4 b^2 \arcsin(cx)\, d^2}{(cex+cd)^2(d^2c^2-e^2)e}$$
$$-\frac{2 I c^4 b^2 \arcsin(cx)\, x d}{(cex+cd)^2(d^2c^2-e^2)} - \frac{c^4 b^2 \arcsin(cx)^2 d^2}{2(cex+cd)^2(d^2c^2-e^2)e} + \frac{c^3 b^2 \arcsin(cx)\, e\sqrt{-c^2x^2+1}\, x}{(cex+cd)^2(d^2c^2-e^2)} + \frac{c^3 b^2 \arcsin(cx)\sqrt{-c^2x^2+1}\, d}{(cex+cd)^2(d^2c^2-e^2)}$$
$$+\frac{c^2 b^2 \arcsin(cx)^2 e}{2(cex+cd)^2(d^2c^2-e^2)} + \frac{2c^2b^2\ln\left(I c x+\sqrt{-c^2x^2+1}\right)}{(d^2c^2-e^2)e} - \frac{c^2b^2\ln\left(2 I c d\left(I c x+\sqrt{-c^2x^2+1}\right)+\left(I c x+\sqrt{-c^2x^2+1}\right)^2 e-e\right)}{(d^2c^2-e^2)e}$$
$$-\frac{c^3 b^2\sqrt{-d^2c^2+e^2}\, d\arcsin(cx)\ln\left(\frac{I c d+e\left(I c x+\sqrt{-c^2x^2+1}\right)-\sqrt{-d^2c^2+e^2}}{I c d-\sqrt{-d^2c^2+e^2}}\right)}{(d^2c^2-e^2)^2 e}$$
$$+\frac{c^3 b^2\sqrt{-d^2c^2+e^2}\, d\arcsin(cx)\ln\left(\frac{I c d+e\left(I c x+\sqrt{-c^2x^2+1}\right)+\sqrt{-d^2c^2+e^2}}{I c d+\sqrt{-d^2c^2+e^2}}\right)}{(d^2c^2-e^2)^2 e}$$
$$+\frac{I c^3 b^2\sqrt{-d^2c^2+e^2}\, d\,\mathrm{dilog}\left(\frac{I c d+e\left(I c x+\sqrt{-c^2x^2+1}\right)-\sqrt{-d^2c^2+e^2}}{I c d-\sqrt{-d^2c^2+e^2}}\right)}{(d^2c^2-e^2)^2 e} - \frac{I c^4 b^2\arcsin(cx)\, e x^2}{(cex+cd)^2(d^2c^2-e^2)} - \frac{c^2 a b\arcsin(cx)}{(cex+cd)^2 e}$$

$$+\frac{c^2 a b \sqrt{-\left(cx+\frac{cd}{e}\right)^2+\frac{2cd\left(cx+\frac{cd}{e}\right)}{e}-\frac{d^2c^2-e^2}{e^2}}}{e\left(d^2c^2-e^2\right)\left(cx+\frac{cd}{e}\right)}$$

$$-\frac{c^3 a b d \ln\left(\frac{-\frac{2\left(d^2c^2-e^2\right)}{e^2}+\frac{2cd\left(cx+\frac{cd}{e}\right)}{e}+2\sqrt{-\frac{d^2c^2-e^2}{e^2}}\sqrt{-\left(cx+\frac{cd}{e}\right)^2+\frac{2cd\left(cx+\frac{cd}{e}\right)}{e}-\frac{d^2c^2-e^2}{e^2}}}{cx+\frac{cd}{e}}\right)}{e^2\left(d^2c^2-e^2\right)\sqrt{-\frac{d^2c^2-e^2}{e^2}}}$$

```
Problem 12: Unable to integrate problem.
```

$$\int \frac{(a+b\arcsin(cx))\sqrt{-c^2 d x^2+d}}{(gx+f)^2}\,dx$$

```
Optimal(type 4, 814 leaves, 35 steps):
```

$$-\frac{a\sqrt{-c^2dx^2+d}}{g(gx+f)}-\frac{b\arcsin(cx)\sqrt{-c^2dx^2+d}}{g(gx+f)}-\frac{a c^3 f^2\arcsin(cx)\sqrt{-c^2dx^2+d}}{g^2\left(c^2f^2-g^2\right)\sqrt{-c^2x^2+1}}-\frac{b c^3 f^2\arcsin(cx)^2\sqrt{-c^2dx^2+d}}{2g^2\left(c^2f^2-g^2\right)\sqrt{-c^2x^2+1}}$$

$$+\frac{\left(fxc^2+g\right)^2(a+b\arcsin(cx))^2\sqrt{-c^2dx^2+d}}{2bc\left(c^2f^2-g^2\right)(gx+f)^2\sqrt{-c^2x^2+1}}+\frac{bc\ln(gx+f)\sqrt{-c^2dx^2+d}}{g^2\sqrt{-c^2x^2+1}}+\frac{a c^2 f\arctan\left(\frac{fxc^2+g}{\sqrt{c^2f^2-g^2}\sqrt{-c^2x^2+1}}\right)\sqrt{-c^2dx^2+d}}{g^2\sqrt{c^2f^2-g^2}\sqrt{-c^2x^2+1}}$$

$$-\frac{\mathrm{I}\,b c^2 f\arcsin(cx)\ln\left(1-\frac{\mathrm{I}\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)g}{cf-\sqrt{c^2f^2-g^2}}\right)\sqrt{-c^2dx^2+d}}{g^2\sqrt{c^2f^2-g^2}\sqrt{-c^2x^2+1}}+\frac{\mathrm{I}\,b c^2 f\arcsin(cx)\ln\left(1-\frac{\mathrm{I}\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)g}{cf+\sqrt{c^2f^2-g^2}}\right)\sqrt{-c^2dx^2+d}}{g^2\sqrt{c^2f^2-g^2}\sqrt{-c^2x^2+1}}$$

$$-\frac{b c^2 f\,\mathrm{polylog}\left(2,\frac{\mathrm{I}\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)g}{cf-\sqrt{c^2f^2-g^2}}\right)\sqrt{-c^2dx^2+d}}{g^2\sqrt{c^2f^2-g^2}\sqrt{-c^2x^2+1}}+\frac{b c^2 f\,\mathrm{polylog}\left(2,\frac{\mathrm{I}\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}\right)g}{cf+\sqrt{c^2f^2-g^2}}\right)\sqrt{-c^2dx^2+d}}{g^2\sqrt{c^2f^2-g^2}\sqrt{-c^2x^2+1}}$$

$$+\frac{(a+b\arcsin(cx))^2\sqrt{-c^2x^2+1}\sqrt{-c^2dx^2+d}}{2bc(gx+f)^2}$$

```
Result(type 9, 1580 leaves):
```

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

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

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

$$+\frac{a c^{2}fd\ln\left(\frac{-\frac{2d\left(c^{2}f^{2}-g^{2}\right)}{g^{2}}+\frac{2c^{2}df\left(x+\frac{f}{g}\right)}{g}+2\sqrt{-\frac{d\left(c^{2}f^{2}-g^{2}\right)}{g^{2}}}\sqrt{-\left(x+\frac{f}{g}\right)^{2}c^{2}d+\frac{2c^{2}df\left(x+\frac{f}{g}\right)}{g}-\frac{d\left(c^{2}f^{2}-g^{2}\right)}{g^{2}}}}{x+\frac{f}{g}}\right)}{g\left(c^{2}f^{2}-g^{2}\right)\sqrt{-\frac{d\left(c^{2}f^{2}-g^{2}\right)}{g^{2}}}}$$

$$+\frac{a c^{2}\sqrt{-\left(x+\frac{f}{g}\right)^{2}c^{2}d+\frac{2c^{2}df\left(x+\frac{f}{g}\right)}{g}-\frac{d\left(c^{2}f^{2}-g^{2}\right)}{g^{2}}}\;x}{c^{2}f^{2}-g^{2}}+\frac{a c^{2}d\arctan\left(\frac{\sqrt{c^{2}d}\,x}{\sqrt{-\left(x+\frac{f}{g}\right)^{2}c^{2}d+\frac{2c^{2}df\left(x+\frac{f}{g}\right)}{g}-\frac{d\left(c^{2}f^{2}-g^{2}\right)}{g^{2}}}}\right)}{\left(c^{2}f^{2}-g^{2}\right)\sqrt{c^{2}d}}$$

$$+b\left(\frac{\sqrt{-d\left(c^{2}x^{2}-1\right)}\sqrt{-c^{2}x^{2}+1}\,\arcsin(cx)^{2}c}{2\left(c^{2}x^{2}-1\right)g^{2}}-\frac{\sqrt{-d\left(c^{2}x^{2}-1\right)}\left(\mathrm{I}\sqrt{-c^{2}x^{2}+1}\,xc+c^{2}x^{2}-1\right)\arcsin(cx)\left(fxc^{2}+g-\mathrm{I}\sqrt{-c^{2}x^{2}+1}\,cf\right)}{\left(c^{2}x^{2}-1\right)g^{2}\left(gx+f\right)}\right.$$

$$\left.+\frac{1}{\left(c^{2}x^{2}-1\right)g^{2}\left(c^{2}f^{2}-g^{2}\right)}\left(\sqrt{-d\left(c^{2}x^{2}-1\right)}\sqrt{-c^{2}x^{2}+1}\left(-\mathrm{I}\,\mathrm{dilog}\left(\frac{\mathrm{I}cf}{\mathrm{I}cf-\sqrt{-c^{2}f^{2}+g^{2}}}+\frac{\left(\mathrm{I}cx+\sqrt{-c^{2}x^{2}+1}\right)g}{\mathrm{I}cf-\sqrt{-c^{2}f^{2}+g^{2}}}\right.\right.\right.\right.$$

$$- \frac{\sqrt{-c^2 f^2 + g^2}}{I c f - \sqrt{-c^2 f^2 + g^2}} \right) \sqrt{-c^2 f^2 + g^2}\, c f + I\, \mathrm{dilog}\left(\frac{I c f}{I c f + \sqrt{-c^2 f^2 + g^2}} + \frac{\left(I c x + \sqrt{-c^2 x^2 + 1}\right) g}{I c f + \sqrt{-c^2 f^2 + g^2}} + \frac{\sqrt{-c^2 f^2 + g^2}}{I c f + \sqrt{-c^2 f^2 + g^2}} \right) \sqrt{-c^2 f^2 + g^2}\, c f$$

$$+ \arcsin(c x) \ln\left(\frac{I c f + \left(I c x + \sqrt{-c^2 x^2 + 1}\right) g - \sqrt{-c^2 f^2 + g^2}}{I c f - \sqrt{-c^2 f^2 + g^2}} \right) \sqrt{-c^2 f^2 + g^2}\, c f$$

$$- \arcsin(c x) \ln\left(\frac{I c f + \left(I c x + \sqrt{-c^2 x^2 + 1}\right) g + \sqrt{-c^2 f^2 + g^2}}{I c f + \sqrt{-c^2 f^2 + g^2}} \right) \sqrt{-c^2 f^2 + g^2}\, c f - 2\, \Im(\arcsin(c x))\, c^2 f^2 + 2 \ln\left(e^{I \Re(\arcsin(c x))}\right) c^2 f^2 - \ln\Big(2 I c f \Big(I c x$$

$$+ \sqrt{-c^2 x^2 + 1}\Big) + g \left(I c x + \sqrt{-c^2 x^2 + 1}\right)^2 - g\Big) c^2 f^2 + 2\, \Im(\arcsin(c x))\, g^2 - 2 \ln\left(e^{I \Re(\arcsin(c x))}\right) g^2 + \ln\Big(2 I c f \left(I c x + \sqrt{-c^2 x^2 + 1}\right) + g \Big(I c x$$

$$+ \sqrt{-c^2 x^2 + 1}\Big)^2 - g\Big) g^2\Big) c\Big)\Big)$$

Problem 13: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(-c^2 d x^2 + d\right)^{3/2} (a + b \arcsin(c x))}{g x + f}\, dx$$

Optimal(type 4, 999 leaves, 29 steps):

$$- \frac{a d (c f - g) (c f + g) \sqrt{-c^2 d x^2 + d}}{g^3} - \frac{b d (c f - g) (c f + g) \arcsin(c x) \sqrt{-c^2 d x^2 + d}}{g^3} + \frac{c^2 d f x (a + b \arcsin(c x)) \sqrt{-c^2 d x^2 + d}}{2 g^2}$$

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

$$+ \frac{b c^3 d x^3 \sqrt{-c^2 d x^2 + d}}{9 g \sqrt{-c^2 x^2 + 1}} + \frac{c d f (a + b \arcsin(c x))^2 \sqrt{-c^2 d x^2 + d}}{4 b g^2 \sqrt{-c^2 x^2 + 1}} - \frac{c d (c f - g) (c f + g) x (a + b \arcsin(c x))^2 \sqrt{-c^2 d x^2 + d}}{2 b g^3 \sqrt{-c^2 x^2 + 1}}$$

$$- \frac{d \left(c^2 f^2 - g^2\right)^2 (a + b \arcsin(c x))^2 \sqrt{-c^2 d x^2 + d}}{2 b c g^4 (g x + f) \sqrt{-c^2 x^2 + 1}} + \frac{a d \left(c^2 f^2 - g^2\right)^{3/2} \arctan\left(\frac{f x c^2 + g}{\sqrt{c^2 f^2 - g^2}\, \sqrt{-c^2 x^2 + 1}} \right) \sqrt{-c^2 d x^2 + d}}{g^4 \sqrt{-c^2 x^2 + 1}}$$

$$+ \frac{I b d \left(c^2 f^2 - g^2\right)^{3/2} \arcsin(c x) \ln\left(1 - \frac{I \left(I c x + \sqrt{-c^2 x^2 + 1}\right) g}{c f + \sqrt{c^2 f^2 - g^2}} \right) \sqrt{-c^2 d x^2 + d}}{g^4 \sqrt{-c^2 x^2 + 1}}$$

$$- \frac{I b d \left(c^2 f^2 - g^2\right)^{3/2} \arcsin(c x) \ln\left(1 - \frac{I \left(I c x + \sqrt{-c^2 x^2 + 1}\right) g}{c f - \sqrt{c^2 f^2 - g^2}} \right) \sqrt{-c^2 d x^2 + d}}{g^4 \sqrt{-c^2 x^2 + 1}}$$

$$-\frac{b d \left(c^2 f^2-g^2\right)^{3/2} \operatorname{polylog}\left(2, \frac{I\left(I c x+\sqrt{-c^2 x^2+1}\right) g}{c f-\sqrt{c^2 f^2-g^2}}\right) \sqrt{-c^2 d x^2+d}}{g^4 \sqrt{-c^2 x^2+1}}$$

$$+\frac{b d \left(c^2 f^2-g^2\right)^{3/2} \operatorname{polylog}\left(2, \frac{I\left(I c x+\sqrt{-c^2 x^2+1}\right) g}{c f+\sqrt{c^2 f^2-g^2}}\right) \sqrt{-c^2 d x^2+d}}{g^4 \sqrt{-c^2 x^2+1}}-\frac{d (c f-g)(c f+g)(a+b \arcsin(c x))^2 \sqrt{-c^2 x^2+1} \sqrt{-c^2 d x^2+d}}{2 b c g^2 (g x+f)}$$

Result(type ?, 2759 leaves): Display of huge result suppressed!

Problem 15: Result more than twice size of optimal antiderivative.

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

Optimal(type 3, 242 leaves, 9 steps):

$$-\frac{2 f g \left(-c^2 x^2+1\right)(a+b \arcsin(c x))}{c^2 \sqrt{-c^2 d x^2+d}}-\frac{g^2 x\left(-c^2 x^2+1\right)(a+b \arcsin(c x))}{2 c^2 \sqrt{-c^2 d x^2+d}}+\frac{2 b f g x \sqrt{-c^2 x^2+1}}{c \sqrt{-c^2 d x^2+d}}+\frac{b g^2 x^2 \sqrt{-c^2 x^2+1}}{4 c \sqrt{-c^2 d x^2+d}}$$

$$+\frac{f^2 (a+b \arcsin(c x))^2 \sqrt{-c^2 x^2+1}}{2 b c \sqrt{-c^2 d x^2+d}}+\frac{g^2 (a+b \arcsin(c x))^2 \sqrt{-c^2 x^2+1}}{4 b c^3 \sqrt{-c^2 d x^2+d}}$$

Result(type 3, 548 leaves):

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

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

$$-\frac{b \sqrt{-d\left(c^2 x^2-1\right)} \sqrt{-c^2 x^2+1} \arcsin(c x)^2 g^2}{4 c^3 d\left(c^2 x^2-1\right)}-\frac{b \sqrt{-d\left(c^2 x^2-1\right)}\, g^2 \arcsin(c x)\, x^3}{2 d\left(c^2 x^2-1\right)}+\frac{b \sqrt{-d\left(c^2 x^2-1\right)}\, g^2 \sqrt{-c^2 x^2+1}}{8 c^3 d\left(c^2 x^2-1\right)}$$

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

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

$$\int \frac{(g x+f)^3 (a+b \arcsin(c x))}{\left(-c^2 d x^2+d\right)^{3/2}}\, dx$$

Optimal(type 3, 289 leaves, 11 steps):

$$\frac{\left(g\left(3c^2f^2+g^2\right)+c^2f\left(c^2f^2+3g^2\right)x\right)\left(a+b\arcsin(cx)\right)}{c^4d\sqrt{-c^2dx^2+d}}+\frac{g^3\left(-c^2x^2+1\right)\left(a+b\arcsin(cx)\right)}{c^4d\sqrt{-c^2dx^2+d}}-\frac{bg^3x\sqrt{-c^2x^2+1}}{c^3d\sqrt{-c^2dx^2+d}}$$
$$-\frac{3fg^2\left(a+b\arcsin(cx)\right)^2\sqrt{-c^2x^2+1}}{2bc^3d\sqrt{-c^2dx^2+d}}+\frac{b\left(cf+g\right)^3\ln(-cx+1)\sqrt{-c^2x^2+1}}{2c^4d\sqrt{-c^2dx^2+d}}+\frac{b\left(cf-g\right)^3\ln(cx+1)\sqrt{-c^2x^2+1}}{2c^4d\sqrt{-c^2dx^2+d}}$$

Result(type 3, 1157 leaves):

$$\frac{af^3x}{d\sqrt{-c^2dx^2+d}}-\frac{ag^3x^2}{c^2d\sqrt{-c^2dx^2+d}}+\frac{2ag^3}{dc^4\sqrt{-c^2dx^2+d}}+\frac{3afg^2x}{c^2d\sqrt{-c^2dx^2+d}}-\frac{3afg^2\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2dx^2+d}}\right)}{c^2d\sqrt{c^2d}}+\frac{3af^2g}{c^2d\sqrt{-c^2dx^2+d}}$$
$$+\frac{\mathrm{I}b\sqrt{-c^2x^2+1}\sqrt{-d\left(c^2x^2-1\right)}f^3\arcsin(cx)}{cd^2\left(c^2x^2-1\right)}-\frac{3b\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1}\ln\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}-\mathrm{I}\right)fg^2}{c^3d^2\left(c^2x^2-1\right)}$$
$$+\frac{3b\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1}\ln\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}+\mathrm{I}\right)f^2g}{c^2d^2\left(c^2x^2-1\right)}-\frac{3b\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1}\ln\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}+\mathrm{I}\right)fg^2}{c^3d^2\left(c^2x^2-1\right)}$$
$$+\frac{b\sqrt{-d\left(c^2x^2-1\right)}g^3\sqrt{-c^2x^2+1}\,x}{c^3d^2\left(c^2x^2-1\right)}+\frac{3\mathrm{I}b\sqrt{-c^2x^2+1}\sqrt{-d\left(c^2x^2-1\right)}f\arcsin(cx)g^2}{c^3d^2\left(c^2x^2-1\right)}-\frac{3b\sqrt{-d\left(c^2x^2-1\right)}\arcsin(cx)xfg^2}{c^2d^2\left(c^2x^2-1\right)}$$
$$-\frac{3b\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1}\ln\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}-\mathrm{I}\right)f^2g}{c^2d^2\left(c^2x^2-1\right)}+\frac{3b\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1}\arcsin(cx)^2fg^2}{2c^3d^2\left(c^2x^2-1\right)}$$
$$+\frac{b\sqrt{-d\left(c^2x^2-1\right)}g^3\arcsin(cx)x^2}{c^2d^2\left(c^2x^2-1\right)}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\arcsin(cx)xf^3}{d^2\left(c^2x^2-1\right)}-\frac{3b\sqrt{-d\left(c^2x^2-1\right)}\arcsin(cx)f^2g}{c^2d^2\left(c^2x^2-1\right)}$$
$$-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1}\ln\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}-\mathrm{I}\right)f^3}{cd^2\left(c^2x^2-1\right)}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1}\ln\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}-\mathrm{I}\right)g^3}{c^4d^2\left(c^2x^2-1\right)}$$
$$-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1}\ln\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}+\mathrm{I}\right)f^3}{cd^2\left(c^2x^2-1\right)}+\frac{b\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1}\ln\left(\mathrm{I}cx+\sqrt{-c^2x^2+1}+\mathrm{I}\right)g^3}{c^4d^2\left(c^2x^2-1\right)}$$
$$-\frac{2b\sqrt{-d\left(c^2x^2-1\right)}g^3\arcsin(cx)}{c^4d^2\left(c^2x^2-1\right)}$$

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

$$\int\frac{\left(gx+f\right)\left(a+b\arcsin(cx)\right)}{\left(-c^2dx^2+d\right)^{5/2}}\,dx$$

Optimal(type 3, 202 leaves, 6 steps):

$$\frac{2fx\left(a+b\arcsin(cx)\right)}{3d^2\sqrt{-c^2dx^2+d}}+\frac{\left(fxc^2+g\right)\left(a+b\arcsin(cx)\right)}{3c^2d^2\left(-c^2x^2+1\right)\sqrt{-c^2dx^2+d}}-\frac{b\left(gx+f\right)}{6cd^2\sqrt{-c^2x^2+1}\sqrt{-c^2dx^2+d}}-\frac{bg\,\mathrm{arctanh}(cx)\sqrt{-c^2x^2+1}}{6c^2d^2\sqrt{-c^2dx^2+d}}$$

$$+\frac{b f \ln(-c^2 x^2+1)\sqrt{-c^2 x^2+1}}{3 c d^2 \sqrt{-c^2 d x^2+d}}$$

Result(type ?, 2235 leaves): Display of huge result suppressed!

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

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

Optimal(type 3, 647 leaves, 23 steps):

$$\frac{8 b^2 f g \sqrt{-c^2 d x^2+d}}{9 c^2}-\frac{b^2 f^2 x \sqrt{-c^2 d x^2+d}}{4}+\frac{b^2 g^2 x \sqrt{-c^2 d x^2+d}}{64 c^2}-\frac{b^2 g^2 x^3 \sqrt{-c^2 d x^2+d}}{32}+\frac{4 b^2 f g (-c^2 x^2+1)\sqrt{-c^2 d x^2+d}}{27 c^2}$$
$$+\frac{f^2 x (a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{2}-\frac{g^2 x (a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{8 c^2}+\frac{g^2 x^3 (a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{4}$$
$$-\frac{2 f g (-c^2 x^2+1)(a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{3 c^2}+\frac{b^2 f^2 \arcsin(c x)\sqrt{-c^2 d x^2+d}}{4 c \sqrt{-c^2 x^2+1}}-\frac{b^2 g^2 \arcsin(c x)\sqrt{-c^2 d x^2+d}}{64 c^3 \sqrt{-c^2 x^2+1}}$$
$$+\frac{4 b f g x (a+b \arcsin(c x))\sqrt{-c^2 d x^2+d}}{3 c \sqrt{-c^2 x^2+1}}-\frac{b c f^2 x^2 (a+b \arcsin(c x))\sqrt{-c^2 d x^2+d}}{2 \sqrt{-c^2 x^2+1}}+\frac{b g^2 x^2 (a+b \arcsin(c x))\sqrt{-c^2 d x^2+d}}{8 c \sqrt{-c^2 x^2+1}}$$
$$-\frac{4 b c f g x^3 (a+b \arcsin(c x))\sqrt{-c^2 d x^2+d}}{9 \sqrt{-c^2 x^2+1}}-\frac{b c g^2 x^4 (a+b \arcsin(c x))\sqrt{-c^2 d x^2+d}}{8 \sqrt{-c^2 x^2+1}}+\frac{f^2 (a+b \arcsin(c x))^3 \sqrt{-c^2 d x^2+d}}{6 b c \sqrt{-c^2 x^2+1}}$$
$$+\frac{g^2 (a+b \arcsin(c x))^3 \sqrt{-c^2 d x^2+d}}{24 b c^3 \sqrt{-c^2 x^2+1}}$$

Result(type ?, 2050 leaves): Display of huge result suppressed!

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

$$\int (g x+f)\left(-c^2 d x^2+d\right)^{3/2} (a+b \arcsin(c x))^2\, dx$$

Optimal(type 3, 547 leaves, 19 steps):

$$\frac{16 b^2 d g \sqrt{-c^2 d x^2+d}}{75 c^2}-\frac{15 b^2 d f x \sqrt{-c^2 d x^2+d}}{64}+\frac{8 b^2 d g (-c^2 x^2+1)\sqrt{-c^2 d x^2+d}}{225 c^2}-\frac{b^2 d f x (-c^2 x^2+1)\sqrt{-c^2 d x^2+d}}{32}$$
$$+\frac{2 b^2 d g (-c^2 x^2+1)^2 \sqrt{-c^2 d x^2+d}}{125 c^2}+\frac{b d f (-c^2 x^2+1)^{3/2} (a+b \arcsin(c x))\sqrt{-c^2 d x^2+d}}{8 c}+\frac{3 d f x (a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{8}$$
$$+\frac{d f x (-c^2 x^2+1)(a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{4}-\frac{d g (-c^2 x^2+1)^2 (a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{5 c^2}+\frac{9 b^2 d f \arcsin(c x)\sqrt{-c^2 d x^2+d}}{64 c \sqrt{-c^2 x^2+1}}$$

$$+\frac{2 b d g x \left(a+b \arcsin\left(c x\right)\right) \sqrt{-c^{2} d x^{2}+d}}{5 c \sqrt{-c^{2} x^{2}+1}}-\frac{3 b c d f x^{2} \left(a+b \arcsin\left(c x\right)\right) \sqrt{-c^{2} d x^{2}+d}}{8 \sqrt{-c^{2} x^{2}+1}}-\frac{4 b c d g x^{3} \left(a+b \arcsin\left(c x\right)\right) \sqrt{-c^{2} d x^{2}+d}}{15 \sqrt{-c^{2} x^{2}+1}}$$

$$+\frac{2 b c^{3} d g x^{5} \left(a+b \arcsin\left(c x\right)\right) \sqrt{-c^{2} d x^{2}+d}}{25 \sqrt{-c^{2} x^{2}+1}}+\frac{d f \left(a+b \arcsin\left(c x\right)\right)^{3} \sqrt{-c^{2} d x^{2}+d}}{8 b c \sqrt{-c^{2} x^{2}+1}}$$

Result(type 3, 1639 leaves):

$$-\frac{2 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d \arcsin\left(c x\right) \sqrt{-c^{2} x^{2}+1}\, x}{5 \left(c^{2} x^{2}-1\right) c}-\frac{b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d c^{3} \arcsin\left(c x\right) \sqrt{-c^{2} x^{2}+1}\, x^{4}}{8 \left(c^{2} x^{2}-1\right)}$$

$$+\frac{5 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d c \arcsin\left(c x\right) \sqrt{-c^{2} x^{2}+1}\, x^{2}}{8 \left(c^{2} x^{2}-1\right)}+\frac{374 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d x^{2}}{1125 \left(c^{2} x^{2}-1\right)}+\frac{17 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d x}{64 \left(c^{2} x^{2}-1\right)}-\frac{298 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d}{1125 \left(c^{2} x^{2}-1\right) c^{2}}$$

$$-\frac{19 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d c^{2} x^{3}}{64 \left(c^{2} x^{2}-1\right)}-\frac{3 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d \arcsin\left(c x\right)^{2} x^{2}}{5 \left(c^{2} x^{2}-1\right)}-\frac{5 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d \arcsin\left(c x\right)^{2} x}{8 \left(c^{2} x^{2}-1\right)}+\frac{2 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d c^{4} x^{6}}{125 \left(c^{2} x^{2}-1\right)}$$

$$-\frac{94 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d c^{2} x^{4}}{1125 \left(c^{2} x^{2}-1\right)}+\frac{b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d \arcsin\left(c x\right)^{2}}{5 \left(c^{2} x^{2}-1\right) c^{2}}+\frac{b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d c^{4} x^{5}}{32 \left(c^{2} x^{2}-1\right)}+\frac{3 a^{2} f d x \sqrt{-c^{2} d x^{2}+d}}{8}$$

$$+\frac{3 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d c^{2} \arcsin\left(c x\right)^{2} x^{4}}{5 \left(c^{2} x^{2}-1\right)}-\frac{b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d c^{4} \arcsin\left(c x\right)^{2} x^{5}}{4 \left(c^{2} x^{2}-1\right)}+\frac{7 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d c^{2} \arcsin\left(c x\right)^{2} x^{3}}{8 \left(c^{2} x^{2}-1\right)}$$

$$-\frac{17 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d \arcsin\left(c x\right) \sqrt{-c^{2} x^{2}+1}}{64 c \left(c^{2} x^{2}-1\right)}-\frac{b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, \sqrt{-c^{2} x^{2}+1}\, \arcsin\left(c x\right)^{3} f d}{8 c \left(c^{2} x^{2}-1\right)}+\frac{2 a b \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d \arcsin\left(c x\right)}{5 \left(c^{2} x^{2}-1\right) c^{2}}$$

$$-\frac{6 a b \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d \arcsin\left(c x\right) x^{2}}{5 \left(c^{2} x^{2}-1\right)}-\frac{17 a b \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d \sqrt{-c^{2} x^{2}+1}}{64 c \left(c^{2} x^{2}-1\right)}-\frac{5 a b \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d \arcsin\left(c x\right) x}{4 \left(c^{2} x^{2}-1\right)}$$

$$-\frac{b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d c^{4} \arcsin\left(c x\right)^{2} x^{6}}{5 \left(c^{2} x^{2}-1\right)}+\frac{a^{2} f x \left(-c^{2} d x^{2}+d\right)^{3/2}}{4}-\frac{3 a b \sqrt{-d \left(c^{2} x^{2}-1\right)}\, \sqrt{-c^{2} x^{2}+1}\, \arcsin\left(c x\right)^{2} f d}{8 c \left(c^{2} x^{2}-1\right)}$$

$$-\frac{2 a b \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d c^{4} \arcsin\left(c x\right) x^{6}}{5 \left(c^{2} x^{2}-1\right)}+\frac{6 a b \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d c^{2} \arcsin\left(c x\right) x^{4}}{5 \left(c^{2} x^{2}-1\right)}-\frac{a b \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d c^{4} \arcsin\left(c x\right) x^{5}}{2 \left(c^{2} x^{2}-1\right)}$$

$$+\frac{7 a b \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d c^{2} \arcsin\left(c x\right) x^{3}}{4 \left(c^{2} x^{2}-1\right)}-\frac{2 a b \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d c^{3} \sqrt{-c^{2} x^{2}+1}\, x^{5}}{25 \left(c^{2} x^{2}-1\right)}+\frac{4 a b \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d c \sqrt{-c^{2} x^{2}+1}\, x^{3}}{15 \left(c^{2} x^{2}-1\right)}$$

$$-\frac{2 a b \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d \sqrt{-c^{2} x^{2}+1}\, x}{5 \left(c^{2} x^{2}-1\right) c}-\frac{a b \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d c^{3} \sqrt{-c^{2} x^{2}+1}\, x^{4}}{8 \left(c^{2} x^{2}-1\right)}+\frac{5 a b \sqrt{-d \left(c^{2} x^{2}-1\right)}\, f d c \sqrt{-c^{2} x^{2}+1}\, x^{2}}{8 \left(c^{2} x^{2}-1\right)}$$

$$-\frac{2 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d c^{3} \arcsin\left(c x\right) \sqrt{-c^{2} x^{2}+1}\, x^{5}}{25 \left(c^{2} x^{2}-1\right)}+\frac{4 b^{2} \sqrt{-d \left(c^{2} x^{2}-1\right)}\, g d c \arcsin\left(c x\right) \sqrt{-c^{2} x^{2}+1}\, x^{3}}{15 \left(c^{2} x^{2}-1\right)}+\frac{3 a^{2} f d^{2} \arctan\left(\frac{\sqrt{c^{2} d}\, x}{\sqrt{-c^{2} d x^{2}+d}}\right)}{8 \sqrt{c^{2} d}}$$

$$-\frac{a^2 g\left(-c^2 d x^2+d\right)^{5/2}}{5 c^2 d}$$

Problem 21: Unable to integrate problem.

$$\int \frac{\left(-c^2 d x^2+d\right)^{3/2}\left(a+b \arcsin(c x)\right)^2}{g x+f}\,dx$$

Optimal(type 4, 1882 leaves, 50 steps):

$$-\frac{I b^2 d\left(c^2 f^2-g^2\right)^{3/2} \arcsin(c x)^2 \ln\left(1-\frac{I\left(I c x+\sqrt{-c^2 x^2+1}\right) g}{c f-\sqrt{c^2 f^2-g^2}}\right)\sqrt{-c^2 d x^2+d}}{g^4\sqrt{-c^2 x^2+1}}-\frac{b c^3 d f x^2\left(a+b \arcsin(c x)\right)\sqrt{-c^2 d x^2+d}}{2 g^2\sqrt{-c^2 x^2+1}}$$

$$-\frac{d\left(c^2 f^2-g^2\right)^2\left(a+b \arcsin(c x)\right)^3\sqrt{-c^2 d x^2+d}}{3 b c g^4 (g x+f)\sqrt{-c^2 x^2+1}}+\frac{I b^2 d\left(c^2 f^2-g^2\right)^{3/2} \arcsin(c x)^2 \ln\left(1-\frac{I\left(I c x+\sqrt{-c^2 x^2+1}\right) g}{c f+\sqrt{c^2 f^2-g^2}}\right)\sqrt{-c^2 d x^2+d}}{g^4\sqrt{-c^2 x^2+1}}$$

$$-\frac{d (c f-g)(c f+g)\left(a+b \arcsin(c x)\right)^3\sqrt{-c^2 x^2+1}\sqrt{-c^2 d x^2+d}}{3 b c g^2 (g x+f)}$$

$$-\frac{2 I a b d\left(c^2 f^2-g^2\right)^{3/2} \arcsin(c x) \ln\left(1-\frac{I\left(I c x+\sqrt{-c^2 x^2+1}\right) g}{c f-\sqrt{c^2 f^2-g^2}}\right)\sqrt{-c^2 d x^2+d}}{g^4\sqrt{-c^2 x^2+1}}+\frac{2 a b c d (c f-g)(c f+g) x\sqrt{-c^2 d x^2+d}}{g^3\sqrt{-c^2 x^2+1}}$$

$$+\frac{2 b^2 c d (c f-g)(c f+g) x \arcsin(c x)\sqrt{-c^2 d x^2+d}}{g^3\sqrt{-c^2 x^2+1}}-\frac{c d (c f-g)(c f+g) x\left(a+b \arcsin(c x)\right)^3\sqrt{-c^2 d x^2+d}}{3 b g^3\sqrt{-c^2 x^2+1}}$$

$$+\frac{2 I a b d\left(c^2 f^2-g^2\right)^{3/2} \arcsin(c x) \ln\left(1-\frac{I\left(I c x+\sqrt{-c^2 x^2+1}\right) g}{c f+\sqrt{c^2 f^2-g^2}}\right)\sqrt{-c^2 d x^2+d}}{g^4\sqrt{-c^2 x^2+1}}+\frac{2 b^2 d (c f-g)(c f+g)\sqrt{-c^2 d x^2+d}}{g^3}$$

$$-\frac{a^2 d (c f-g)(c f+g)\sqrt{-c^2 d x^2+d}}{g^3}-\frac{4 b^2 d\sqrt{-c^2 d x^2+d}}{9 g}-\frac{2 a b d (c f-g)(c f+g) \arcsin(c x)\sqrt{-c^2 d x^2+d}}{g^3}$$

$$+\frac{b^2 c d f \arcsin(c x)\sqrt{-c^2 d x^2+d}}{4 g^2\sqrt{-c^2 x^2+1}}-\frac{2 b c d x\left(a+b \arcsin(c x)\right)\sqrt{-c^2 d x^2+d}}{3 g\sqrt{-c^2 x^2+1}}+\frac{2 b c^3 d x^3\left(a+b \arcsin(c x)\right)\sqrt{-c^2 d x^2+d}}{9 g\sqrt{-c^2 x^2+1}}$$

$$+\frac{c d f\left(a+b \arcsin(c x)\right)^3\sqrt{-c^2 d x^2+d}}{6 b g^2\sqrt{-c^2 x^2+1}}-\frac{2 a b d\left(c^2 f^2-g^2\right)^{3/2} \operatorname{polylog}\left(2, \frac{I\left(I c x+\sqrt{-c^2 x^2+1}\right) g}{c f-\sqrt{c^2 f^2-g^2}}\right)\sqrt{-c^2 d x^2+d}}{g^4\sqrt{-c^2 x^2+1}}$$

$$-\frac{2 b^2 d (c^2 f^2 - g^2)^{3/2} \arcsin(c x) \operatorname{polylog}\left(2, \frac{I\left(I c x + \sqrt{-c^2 x^2+1}\right) g}{c f - \sqrt{c^2 f^2 - g^2}}\right) \sqrt{-c^2 d x^2 + d}}{g^4 \sqrt{-c^2 x^2+1}}$$

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

$$+\frac{2 b^2 d (c^2 f^2 - g^2)^{3/2} \arcsin(c x) \operatorname{polylog}\left(2, \frac{I\left(I c x + \sqrt{-c^2 x^2+1}\right) g}{c f + \sqrt{c^2 f^2 - g^2}}\right) \sqrt{-c^2 d x^2 + d}}{g^4 \sqrt{-c^2 x^2+1}}$$

$$-\frac{2 I b^2 d (c^2 f^2 - g^2)^{3/2} \operatorname{polylog}\left(3, \frac{I\left(I c x + \sqrt{-c^2 x^2+1}\right) g}{c f - \sqrt{c^2 f^2 - g^2}}\right) \sqrt{-c^2 d x^2 + d}}{g^4 \sqrt{-c^2 x^2+1}}$$

$$+\frac{2 I b^2 d (c^2 f^2 - g^2)^{3/2} \operatorname{polylog}\left(3, \frac{I\left(I c x + \sqrt{-c^2 x^2+1}\right) g}{c f + \sqrt{c^2 f^2 - g^2}}\right) \sqrt{-c^2 d x^2 + d}}{g^4 \sqrt{-c^2 x^2+1}} - \frac{b^2 d (c f - g) (c f + g) \arcsin(c x)^2 \sqrt{-c^2 d x^2 + d}}{g^3}$$

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

$$-\frac{2 b^2 d (-c^2 x^2 + 1) \sqrt{-c^2 d x^2 + d}}{27 g} + \frac{d (-c^2 x^2 + 1) (a + b \arcsin(c x))^2 \sqrt{-c^2 d x^2 + d}}{3 g}$$

```
Result(type 8, 33 leaves):
```

$$\int \frac{(-c^2 d x^2 + d)^{3/2} (a + b \arcsin(c x))^2}{g x + f}\, dx$$

```
Problem 22: Result more than twice size of optimal antiderivative.
```

$$\int (g x + f)^3 (-c^2 d x^2 + d)^{5/2} (a + b \arcsin(c x))^2\, dx$$

```
Optimal(type 3, 2048 leaves, 77 steps):
```

$$\frac{6 b d^2 f^2 g x (a + b \arcsin(c x)) \sqrt{-c^2 d x^2 + d}}{7 c \sqrt{-c^2 x^2+1}} - \frac{d^2 g^3 x^2 (a + b \arcsin(c x))^2 \sqrt{-c^2 d x^2 + d}}{63 c^2} + \frac{15 d^2 f g^2 x^3 (a + b \arcsin(c x))^2 \sqrt{-c^2 d x^2 + d}}{64}$$

$$+\frac{5 d^2 f^3 x\left(-c^2 x^2+1\right)(a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{24}+\frac{5 d^2 g^3 x^4\left(-c^2 x^2+1\right)(a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{63}$$

$$+\frac{d^2 f^3 x\left(-c^2 x^2+1\right)^2(a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{6}+\frac{d^2 g^3 x^4\left(-c^2 x^2+1\right)^2(a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{9}+\frac{96 b^2 d^2 f^2 g \sqrt{-c^2 d x^2+d}}{245 c^2}$$

$$-\frac{1079 b^2 d^2 f g^2 x^3 \sqrt{-c^2 d x^2+d}}{18432}+\frac{80 b^2 d^2 g^3\left(-c^2 x^2+1\right) \sqrt{-c^2 d x^2+d}}{11907 c^4}-\frac{65 b^2 d^2 f^3 x\left(-c^2 x^2+1\right) \sqrt{-c^2 d x^2+d}}{1728}$$

$$+\frac{4 b^2 d^2 g^3\left(-c^2 x^2+1\right)^2 \sqrt{-c^2 d x^2+d}}{1323 c^4}-\frac{b^2 d^2 f^3 x\left(-c^2 x^2+1\right)^2 \sqrt{-c^2 d x^2+d}}{108}+\frac{50 b^2 d^2 g^3\left(-c^2 x^2+1\right)^3 \sqrt{-c^2 d x^2+d}}{27783 c^4}$$

$$-\frac{2 b^2 d^2 g^3\left(-c^2 x^2+1\right)^4 \sqrt{-c^2 d x^2+d}}{729 c^4}+\frac{4 a b d^2 g^3 x \sqrt{-c^2 d x^2+d}}{63 c^3 \sqrt{-c^2 x^2+1}}+\frac{359 b^2 d^2 f g^2 \arcsin(c x) \sqrt{-c^2 d x^2+d}}{12288 c^3 \sqrt{-c^2 x^2+1}}+\frac{4 b^2 d^2 g^3 x \arcsin(c x) \sqrt{-c^2 d x^2+d}}{63 c^3 \sqrt{-c^2 x^2+1}}$$

$$-\frac{5 b c d^2 f^3 x^2(a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{16 \sqrt{-c^2 x^2+1}}+\frac{2 b d^2 g^3 x^3(a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{189 c \sqrt{-c^2 x^2+1}}-\frac{2 b c d^2 g^3 x^5(a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{21 \sqrt{-c^2 x^2+1}}$$

$$+\frac{38 b c^3 d^2 g^3 x^7(a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{441 \sqrt{-c^2 x^2+1}}-\frac{2 b c^5 d^2 g^3 x^9(a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{81 \sqrt{-c^2 x^2+1}}+\frac{5 d^2 f g^2(a+b \arcsin(c x))^3 \sqrt{-c^2 d x^2+d}}{128 b c^3 \sqrt{-c^2 x^2+1}}$$

$$+\frac{15 b d^2 f g^2 x^2(a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{128 c \sqrt{-c^2 x^2+1}}-\frac{6 b c d^2 f^2 g x^3(a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{7 \sqrt{-c^2 x^2+1}}-\frac{59 b c d^2 f g^2 x^4(a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{128 \sqrt{-c^2 x^2+1}}$$

$$+\frac{18 b c^3 d^2 f^2 g x^5(a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{35 \sqrt{-c^2 x^2+1}}+\frac{17 b c^3 d^2 f g^2 x^6(a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{48 \sqrt{-c^2 x^2+1}}$$

$$-\frac{6 b c^5 d^2 f^2 g x^7(a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{49 \sqrt{-c^2 x^2+1}}-\frac{3 b c^5 d^2 f g^2 x^8(a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{32 \sqrt{-c^2 x^2+1}}-\frac{359 b^2 d^2 f g^2 x \sqrt{-c^2 d x^2+d}}{12288 c^2}$$

$$+\frac{209 b^2 c^2 d^2 f g^2 x^5 \sqrt{-c^2 d x^2+d}}{4608}-\frac{3 b^2 c^4 d^2 f g^2 x^7 \sqrt{-c^2 d x^2+d}}{256}+\frac{16 b^2 d^2 f^2 g\left(-c^2 x^2+1\right) \sqrt{-c^2 d x^2+d}}{245 c^2}$$

$$+\frac{36 b^2 d^2 f^2 g\left(-c^2 x^2+1\right)^2 \sqrt{-c^2 d x^2+d}}{1225 c^2}+\frac{6 b^2 d^2 f^2 g\left(-c^2 x^2+1\right)^3 \sqrt{-c^2 d x^2+d}}{343 c^2}+\frac{5 b d^2 f^3\left(-c^2 x^2+1\right)^{3/2}(a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{48 c}$$

$$+\frac{b d^2 f^3\left(-c^2 x^2+1\right)^{5/2}(a+b \arcsin(c x)) \sqrt{-c^2 d x^2+d}}{18 c}-\frac{15 d^2 f g^2 x(a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{128 c^2}$$

$$+\frac{5 d^2 f g^2 x^3\left(-c^2 x^2+1\right)(a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{16}+\frac{3 d^2 f g^2 x^3\left(-c^2 x^2+1\right)^2(a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{8}$$

$$-\frac{3 d^2 f^2 g\left(-c^2 x^2+1\right)^3(a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{7 c^2}+\frac{115 b^2 d^2 f^3 \arcsin(c x) \sqrt{-c^2 d x^2+d}}{1152 c \sqrt{-c^2 x^2+1}}+\frac{5 d^2 f^3(a+b \arcsin(c x))^3 \sqrt{-c^2 d x^2+d}}{48 b c \sqrt{-c^2 x^2+1}}$$

$$+\frac{160 b^2 d^2 g^3 \sqrt{-c^2 d x^2+d}}{3969 c^4}-\frac{245 b^2 d^2 f^3 x \sqrt{-c^2 d x^2+d}}{1152}-\frac{2 d^2 g^3 (a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{63 c^4}+\frac{5 d^2 f^3 x (a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{16}$$
$$+\frac{d^2 g^3 x^4 (a+b \arcsin(c x))^2 \sqrt{-c^2 d x^2+d}}{21}$$

Result(type ?, 5225 leaves): Display of huge result suppressed!

Problem 23: Result more than twice size of optimal antiderivative.

$$\int \frac{(g x+f)^3 (a+b \arcsin(c x))^2}{\sqrt{-c^2 d x^2+d}}\, dx$$

Optimal(type 3, 624 leaves, 17 steps):

$$\frac{6 b^2 f^2 g (-c^2 x^2+1)}{c^2 \sqrt{-c^2 d x^2+d}}+\frac{14 b^2 g^3 (-c^2 x^2+1)}{9 c^4 \sqrt{-c^2 d x^2+d}}+\frac{3 b^2 f g^2 x (-c^2 x^2+1)}{4 c^2 \sqrt{-c^2 d x^2+d}}-\frac{2 b^2 g^3 (-c^2 x^2+1)^2}{27 c^4 \sqrt{-c^2 d x^2+d}}-\frac{3 f^2 g (-c^2 x^2+1) (a+b \arcsin(c x))^2}{c^2 \sqrt{-c^2 d x^2+d}}$$
$$-\frac{2 g^3 (-c^2 x^2+1) (a+b \arcsin(c x))^2}{3 c^4 \sqrt{-c^2 d x^2+d}}-\frac{3 f g^2 x (-c^2 x^2+1) (a+b \arcsin(c x))^2}{2 c^2 \sqrt{-c^2 d x^2+d}}-\frac{g^3 x^2 (-c^2 x^2+1) (a+b \arcsin(c x))^2}{3 c^2 \sqrt{-c^2 d x^2+d}}$$
$$-\frac{3 b^2 f g^2 \arcsin(c x) \sqrt{-c^2 x^2+1}}{4 c^3 \sqrt{-c^2 d x^2+d}}+\frac{6 b f^2 g x (a+b \arcsin(c x)) \sqrt{-c^2 x^2+1}}{c \sqrt{-c^2 d x^2+d}}+\frac{4 b g^3 x (a+b \arcsin(c x)) \sqrt{-c^2 x^2+1}}{3 c^3 \sqrt{-c^2 d x^2+d}}$$
$$+\frac{3 b f g^2 x^2 (a+b \arcsin(c x)) \sqrt{-c^2 x^2+1}}{2 c \sqrt{-c^2 d x^2+d}}+\frac{2 b g^3 x^3 (a+b \arcsin(c x)) \sqrt{-c^2 x^2+1}}{9 c \sqrt{-c^2 d x^2+d}}+\frac{f^3 (a+b \arcsin(c x))^3 \sqrt{-c^2 x^2+1}}{3 b c \sqrt{-c^2 d x^2+d}}$$
$$+\frac{f g^2 (a+b \arcsin(c x))^3 \sqrt{-c^2 x^2+1}}{2 b c^3 \sqrt{-c^2 d x^2+d}}$$

Result(type 3, 1875 leaves):

$$-\frac{3 b^2 \sqrt{-d (c^2 x^2-1)}\, f g^2 \arcsin(c x)^2 x^3}{2 d (c^2 x^2-1)}-\frac{3 b^2 \sqrt{-d (c^2 x^2-1)}\, g \arcsin(c x)^2 x^2 f^2}{d (c^2 x^2-1)}-\frac{b^2 \sqrt{-d (c^2 x^2-1)} \sqrt{-c^2 x^2+1} \arcsin(c x)^3 f^3}{3 c d (c^2 x^2-1)}$$
$$-\frac{b^2 \sqrt{-d (c^2 x^2-1)}\, g^3 \arcsin(c x)^2 x^2}{3 c^2 d (c^2 x^2-1)}-\frac{3 b^2 \sqrt{-d (c^2 x^2-1)}\, f g^2 x}{4 c^2 d (c^2 x^2-1)}+\frac{3 b^2 \sqrt{-d (c^2 x^2-1)}\, g \arcsin(c x)^2 f^2}{c^2 d (c^2 x^2-1)}-\frac{2 a b \sqrt{-d (c^2 x^2-1)}\, g^3 \arcsin(c x) x^4}{3 d (c^2 x^2-1)}$$
$$+\frac{a^2 f^3 \arctan\left(\frac{\sqrt{c^2 d}\, x}{\sqrt{-c^2 d x^2+d}}\right)}{\sqrt{c^2 d}}+\frac{2 b^2 \sqrt{-d (c^2 x^2-1)}\, g^3 x^4}{27 d (c^2 x^2-1)}-\frac{40 b^2 \sqrt{-d (c^2 x^2-1)}\, g^3}{27 c^4 d (c^2 x^2-1)}-\frac{a^2 g^3 x^2 \sqrt{-c^2 d x^2+d}}{3 c^2 d}-\frac{3 a^2 f^2 g \sqrt{-c^2 d x^2+d}}{c^2 d}$$
$$+\frac{3 a^2 f g^2 \arctan\left(\frac{\sqrt{c^2 d}\, x}{\sqrt{-c^2 d x^2+d}}\right)}{2 c^2 \sqrt{c^2 d}}-\frac{3 a b \sqrt{-d (c^2 x^2-1)}\, f g^2 \arcsin(c x) x^3}{d (c^2 x^2-1)}+\frac{3 a b \sqrt{-d (c^2 x^2-1)}\, f g^2 \sqrt{-c^2 x^2+1}}{4 c^3 d (c^2 x^2-1)}$$

$$-\frac{6 a b \sqrt{-d (c^2 x^2-1)}\, g \arcsin(c x)\, x^2 f^2}{d (c^2 x^2-1)}-\frac{2 a b \sqrt{-d (c^2 x^2-1)}\, g^3 \sqrt{-c^2 x^2+1}\, x^3}{9 c d (c^2 x^2-1)}-\frac{4 a b \sqrt{-d (c^2 x^2-1)}\, g^3 \sqrt{-c^2 x^2+1}\, x}{3 c^3 d (c^2 x^2-1)}$$

$$+\frac{6 a b \sqrt{-d (c^2 x^2-1)}\, g \arcsin(c x) f^2}{c^2 d (c^2 x^2-1)}-\frac{a b \sqrt{-d (c^2 x^2-1)}\, \sqrt{-c^2 x^2+1}\, \arcsin(c x)^2 f^3}{c d (c^2 x^2-1)}-\frac{2 a b \sqrt{-d (c^2 x^2-1)}\, g^3 \arcsin(c x)\, x^2}{3 c^2 d (c^2 x^2-1)}$$

$$-\frac{2 b^2 \sqrt{-d (c^2 x^2-1)}\, g^3 \arcsin(c x) \sqrt{-c^2 x^2+1}\, x^3}{9 c d (c^2 x^2-1)}-\frac{4 b^2 \sqrt{-d (c^2 x^2-1)}\, g^3 \arcsin(c x) \sqrt{-c^2 x^2+1}\, x}{3 c^3 d (c^2 x^2-1)}$$

$$+\frac{3 b^2 \sqrt{-d (c^2 x^2-1)}\, f g^2 \arcsin(c x) \sqrt{-c^2 x^2+1}}{4 c^3 d (c^2 x^2-1)}-\frac{b^2 \sqrt{-d (c^2 x^2-1)}\, \sqrt{-c^2 x^2+1}\, \arcsin(c x)^3 f g^2}{2 c^3 d (c^2 x^2-1)}+\frac{3 b^2 \sqrt{-d (c^2 x^2-1)}\, f g^2 \arcsin(c x)^2 x}{2 c^2 d (c^2 x^2-1)}$$

$$-\frac{6 b^2 \sqrt{-d (c^2 x^2-1)}\, g f^2}{c^2 d (c^2 x^2-1)}+\frac{38 b^2 \sqrt{-d (c^2 x^2-1)}\, g^3 x^2}{27 c^2 d (c^2 x^2-1)}+\frac{2 b^2 \sqrt{-d (c^2 x^2-1)}\, g^3 \arcsin(c x)^2}{3 c^4 d (c^2 x^2-1)}-\frac{b^2 \sqrt{-d (c^2 x^2-1)}\, g^3 \arcsin(c x)^2 x^4}{3 d (c^2 x^2-1)}$$

$$+\frac{3 b^2 \sqrt{-d (c^2 x^2-1)}\, f g^2 x^3}{4 d (c^2 x^2-1)}+\frac{6 b^2 \sqrt{-d (c^2 x^2-1)}\, g x^2 f^2}{d (c^2 x^2-1)}-\frac{3 a^2 f g^2 x \sqrt{-c^2 d x^2+d}}{2 c^2 d}-\frac{3 a b \sqrt{-d (c^2 x^2-1)}\, \sqrt{-c^2 x^2+1}\, \arcsin(c x)^2 f g^2}{2 c^3 d (c^2 x^2-1)}$$

$$-\frac{3 a b \sqrt{-d (c^2 x^2-1)}\, f g^2 \sqrt{-c^2 x^2+1}\, x^2}{2 c d (c^2 x^2-1)}-\frac{6 a b \sqrt{-d (c^2 x^2-1)}\, g \sqrt{-c^2 x^2+1}\, x f^2}{c d (c^2 x^2-1)}-\frac{3 b^2 \sqrt{-d (c^2 x^2-1)}\, f g^2 \arcsin(c x) \sqrt{-c^2 x^2+1}\, x^2}{2 c d (c^2 x^2-1)}$$

$$-\frac{6 b^2 \sqrt{-d (c^2 x^2-1)}\, g \arcsin(c x) \sqrt{-c^2 x^2+1}\, x f^2}{c d (c^2 x^2-1)}+\frac{3 a b \sqrt{-d (c^2 x^2-1)}\, f g^2 \arcsin(c x)\, x}{c^2 d (c^2 x^2-1)}+\frac{4 a b \sqrt{-d (c^2 x^2-1)}\, g^3 \arcsin(c x)}{3 c^4 d (c^2 x^2-1)}$$

$$-\frac{2 a^2 g^3 \sqrt{-c^2 d x^2+d}}{3 d c^4}$$

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

$$\int \frac{(g x+f)^2 (a+b \arcsin(c x))^2}{(-c^2 d x^2+d)^{5/2}}\, dx$$

```
Optimal(type 4, 974 leaves, 30 steps):
```

$$\frac{2 b^2 f g}{3 c^2 d^2 \sqrt{-c^2 d x^2+d}}+\frac{b^2 f^2 x}{3 d^2 \sqrt{-c^2 d x^2+d}}+\frac{b^2 g^2 x}{3 c^2 d^2 \sqrt{-c^2 d x^2+d}}+\frac{2 f^2 x (a+b \arcsin(c x))^2}{3 d^2 \sqrt{-c^2 d x^2+d}}+\frac{2 f g (a+b \arcsin(c x))^2}{3 c^2 d^2 (-c^2 x^2+1) \sqrt{-c^2 d x^2+d}}$$

$$+\frac{f^2 x (a+b \arcsin(c x))^2}{3 d^2 (-c^2 x^2+1) \sqrt{-c^2 d x^2+d}}+\frac{g^2 x^3 (a+b \arcsin(c x))^2}{3 d^2 (-c^2 x^2+1) \sqrt{-c^2 d x^2+d}}-\frac{b f^2 (a+b \arcsin(c x))}{3 c d^2 \sqrt{-c^2 x^2+1}\, \sqrt{-c^2 d x^2+d}}-\frac{2 b f g x (a+b \arcsin(c x))}{3 c d^2 \sqrt{-c^2 x^2+1}\, \sqrt{-c^2 d x^2+d}}$$

$$-\frac{b g^2 x^2 (a+b \arcsin(c x))}{3 c d^2 \sqrt{-c^2 x^2+1}\, \sqrt{-c^2 d x^2+d}}-\frac{b^2 g^2 \arcsin(c x) \sqrt{-c^2 x^2+1}}{3 c^3 d^2 \sqrt{-c^2 d x^2+d}}+\frac{4 I b f g (a+b \arcsin(c x)) \arctan\left(I c x+\sqrt{-c^2 x^2+1}\right) \sqrt{-c^2 x^2+1}}{3 c^2 d^2 \sqrt{-c^2 d x^2+d}}$$

$$+\frac{I b^2 g^2 \operatorname{polylog}\left(2, -\left(I c x+\sqrt{-c^2 x^2+1}\right)^2\right) \sqrt{-c^2 x^2+1}}{3 c^3 d^2 \sqrt{-c^2 d x^2+d}}+\frac{2 I b^2 f g \operatorname{polylog}\left(2, I \left(I c x+\sqrt{-c^2 x^2+1}\right)\right) \sqrt{-c^2 x^2+1}}{3 c^2 d^2 \sqrt{-c^2 d x^2+d}}$$

$$+\frac{4 b f^2 (a+b\arcsin(cx)) \ln\left(1+\left(I c x+\sqrt{-c^2x^2+1}\right)^2\right)\sqrt{-c^2x^2+1}}{3 c d^2\sqrt{-c^2dx^2+d}}-\frac{2 b g^2 (a+b\arcsin(cx)) \ln\left(1+\left(I c x+\sqrt{-c^2x^2+1}\right)^2\right)\sqrt{-c^2x^2+1}}{3 c^3 d^2\sqrt{-c^2dx^2+d}}$$

$$+\frac{I g^2 (a+b\arcsin(cx))^2\sqrt{-c^2x^2+1}}{3 c^3 d^2\sqrt{-c^2dx^2+d}}-\frac{2 I b^2 f^2 \operatorname{polylog}\left(2,-\left(I c x+\sqrt{-c^2x^2+1}\right)^2\right)\sqrt{-c^2x^2+1}}{3 c d^2\sqrt{-c^2dx^2+d}}-\frac{2 I f^2 (a+b\arcsin(cx))^2\sqrt{-c^2x^2+1}}{3 c d^2\sqrt{-c^2dx^2+d}}$$

$$-\frac{2 I b^2 f g \operatorname{polylog}\left(2,-I\left(I c x+\sqrt{-c^2x^2+1}\right)\right)\sqrt{-c^2x^2+1}}{3 c^2 d^2\sqrt{-c^2dx^2+d}}$$

Result(type ?, 9709 leaves): Display of huge result suppressed!

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

$$\int\frac{(gx+f)\,(a+b\arcsin(cx))^2}{(-c^2dx^2+d)^{5/2}}\,dx$$

Optimal(type 4, 610 leaves, 21 steps):

$$\frac{b^2 g}{3 c^2 d^2\sqrt{-c^2dx^2+d}}+\frac{b^2 f x}{3 d^2\sqrt{-c^2dx^2+d}}+\frac{2 f x (a+b\arcsin(cx))^2}{3 d^2\sqrt{-c^2dx^2+d}}+\frac{g (a+b\arcsin(cx))^2}{3 c^2 d^2 (-c^2x^2+1)\sqrt{-c^2dx^2+d}}+\frac{f x (a+b\arcsin(cx))^2}{3 d^2 (-c^2x^2+1)\sqrt{-c^2dx^2+d}}$$

$$-\frac{b f (a+b\arcsin(cx))}{3 c d^2\sqrt{-c^2x^2+1}\sqrt{-c^2dx^2+d}}-\frac{b g x (a+b\arcsin(cx))}{3 c d^2\sqrt{-c^2x^2+1}\sqrt{-c^2dx^2+d}}-\frac{2 I f (a+b\arcsin(cx))^2\sqrt{-c^2x^2+1}}{3 c d^2\sqrt{-c^2dx^2+d}}$$

$$+\frac{2 I b g (a+b\arcsin(cx)) \arctan\left(I c x+\sqrt{-c^2x^2+1}\right)\sqrt{-c^2x^2+1}}{3 c^2 d^2\sqrt{-c^2dx^2+d}}+\frac{4 b f (a+b\arcsin(cx)) \ln\left(1+\left(I c x+\sqrt{-c^2x^2+1}\right)^2\right)\sqrt{-c^2x^2+1}}{3 c d^2\sqrt{-c^2dx^2+d}}$$

$$-\frac{I b^2 g \operatorname{polylog}\left(2,-I\left(I c x+\sqrt{-c^2x^2+1}\right)\right)\sqrt{-c^2x^2+1}}{3 c^2 d^2\sqrt{-c^2dx^2+d}}+\frac{I b^2 g \operatorname{polylog}\left(2,I\left(I c x+\sqrt{-c^2x^2+1}\right)\right)\sqrt{-c^2x^2+1}}{3 c^2 d^2\sqrt{-c^2dx^2+d}}$$

$$-\frac{2 I b^2 f \operatorname{polylog}\left(2,-\left(I c x+\sqrt{-c^2x^2+1}\right)^2\right)\sqrt{-c^2x^2+1}}{3 c d^2\sqrt{-c^2dx^2+d}}$$

Result(type ?, 5896 leaves): Display of huge result suppressed!

Problem 26: Result more than twice size of optimal antiderivative.

$$\int\frac{(gx+f)\,(a+b\arcsin(cx))}{ex+d}\,dx$$

Optimal(type 4, 357 leaves, 14 steps):

$$-\frac{I b (-dg+ef) \arcsin(cx)^2}{2 e^2}+\frac{g x (a+b\arcsin(cx))}{e}-\frac{b (-dg+ef) \arcsin(cx) \ln(ex+d)}{e^2}+\frac{(-dg+ef) (a+b\arcsin(cx)) \ln(ex+d)}{e^2}$$

$$+\frac{b\,(-d g+e f)\arcsin(c x)\ln\left(1-\frac{I e\left(I c x+\sqrt{-c^2 x^2+1}\right)}{c d-\sqrt{d^2 c^2-e^2}}\right)}{e^2}+\frac{b\,(-d g+e f)\arcsin(c x)\ln\left(1-\frac{I e\left(I c x+\sqrt{-c^2 x^2+1}\right)}{c d+\sqrt{d^2 c^2-e^2}}\right)}{e^2}$$

$$-\frac{I b\,(-d g+e f)\operatorname{polylog}\left(2,\frac{I e\left(I c x+\sqrt{-c^2 x^2+1}\right)}{c d-\sqrt{d^2 c^2-e^2}}\right)}{e^2}-\frac{I b\,(-d g+e f)\operatorname{polylog}\left(2,\frac{I e\left(I c x+\sqrt{-c^2 x^2+1}\right)}{c d+\sqrt{d^2 c^2-e^2}}\right)}{e^2}+\frac{b g\sqrt{-c^2 x^2+1}}{c e}$$

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Result(type 4, 1577 leaves):
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$$\frac{a g x}{e}-\frac{a\ln(c e x+c d)\,d g}{e^2}+\frac{a\ln(c e x+c d)\,f}{e}-\frac{I c^2 b f\operatorname{dilog}\left(\frac{I c d+e\left(I c x+\sqrt{-c^2 x^2+1}\right)-\sqrt{-d^2 c^2+e^2}}{I c d-\sqrt{-d^2 c^2+e^2}}\right)d^2}{e\,(d^2 c^2-e^2)}+\frac{b g\sqrt{-c^2 x^2+1}}{c e}$$

$$+\frac{I b\arcsin(c x)^2 d g}{2 e^2}+\frac{I b e f\operatorname{dilog}\left(\frac{I c d+e\left(I c x+\sqrt{-c^2 x^2+1}\right)+\sqrt{-d^2 c^2+e^2}}{I c d+\sqrt{-d^2 c^2+e^2}}\right)}{d^2 c^2-e^2}+\frac{b\arcsin(c x)\,g x}{e}$$

$$-\frac{I c^2 b f\operatorname{dilog}\left(\frac{I c d+e\left(I c x+\sqrt{-c^2 x^2+1}\right)+\sqrt{-d^2 c^2+e^2}}{I c d+\sqrt{-d^2 c^2+e^2}}\right)d^2}{e\,(d^2 c^2-e^2)}-\frac{b e f\arcsin(c x)\ln\left(\frac{I c d+e\left(I c x+\sqrt{-c^2 x^2+1}\right)+\sqrt{-d^2 c^2+e^2}}{I c d+\sqrt{-d^2 c^2+e^2}}\right)}{d^2 c^2-e^2}$$

$$+\frac{b d g\arcsin(c x)\ln\left(\frac{I c d+e\left(I c x+\sqrt{-c^2 x^2+1}\right)+\sqrt{-d^2 c^2+e^2}}{I c d+\sqrt{-d^2 c^2+e^2}}\right)}{d^2 c^2-e^2}+\frac{b d g\arcsin(c x)\ln\left(\frac{I c d+e\left(I c x+\sqrt{-c^2 x^2+1}\right)-\sqrt{-d^2 c^2+e^2}}{I c d-\sqrt{-d^2 c^2+e^2}}\right)}{d^2 c^2-e^2}$$

$$-\frac{b e f\arcsin(c x)\ln\left(\frac{I c d+e\left(I c x+\sqrt{-c^2 x^2+1}\right)-\sqrt{-d^2 c^2+e^2}}{I c d-\sqrt{-d^2 c^2+e^2}}\right)}{d^2 c^2-e^2}+\frac{I b e f\operatorname{dilog}\left(\frac{I c d+e\left(I c x+\sqrt{-c^2 x^2+1}\right)-\sqrt{-d^2 c^2+e^2}}{I c d-\sqrt{-d^2 c^2+e^2}}\right)}{d^2 c^2-e^2}$$

$$-\frac{I b d g\operatorname{dilog}\left(\frac{I c d+e\left(I c x+\sqrt{-c^2 x^2+1}\right)+\sqrt{-d^2 c^2+e^2}}{I c d+\sqrt{-d^2 c^2+e^2}}\right)}{d^2 c^2-e^2}-\frac{I b\arcsin(c x)^2 f}{2 e}-\frac{I b d g\operatorname{dilog}\left(\frac{I c d+e\left(I c x+\sqrt{-c^2 x^2+1}\right)-\sqrt{-d^2 c^2+e^2}}{I c d-\sqrt{-d^2 c^2+e^2}}\right)}{d^2 c^2-e^2}$$

$$+\frac{I c^2 b d^3 g\operatorname{dilog}\left(\frac{I c d+e\left(I c x+\sqrt{-c^2 x^2+1}\right)+\sqrt{-d^2 c^2+e^2}}{I c d+\sqrt{-d^2 c^2+e^2}}\right)}{e^2\,(d^2 c^2-e^2)}+\frac{I c^2 b d^3 g\operatorname{dilog}\left(\frac{I c d+e\left(I c x+\sqrt{-c^2 x^2+1}\right)-\sqrt{-d^2 c^2+e^2}}{I c d-\sqrt{-d^2 c^2+e^2}}\right)}{e^2\,(d^2 c^2-e^2)}$$

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

$$- \frac{c^2 b d^3 g \arcsin(cx) \ln\left(\frac{I c d + e\left(I c x + \sqrt{-c^2 x^2 + 1}\right) - \sqrt{-d^2 c^2 + e^2}}{I c d - \sqrt{-d^2 c^2 + e^2}}\right)}{e^2 (d^2 c^2 - e^2)} + \frac{c^2 b f \arcsin(cx) \ln\left(\frac{I c d + e\left(I c x + \sqrt{-c^2 x^2 + 1}\right) + \sqrt{-d^2 c^2 + e^2}}{I c d + \sqrt{-d^2 c^2 + e^2}}\right) d^2}{e (d^2 c^2 - e^2)}$$

Problem 27: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 367 leaves, 15 steps):

$$- \frac{I b g \arcsin(cx)^2}{2 e^2} - \frac{(-d g + e f) (a + b \arcsin(cx))}{e^2 (e x + d)} - \frac{b g \arcsin(cx) \ln(e x + d)}{e^2} + \frac{g (a + b \arcsin(cx)) \ln(e x + d)}{e^2}$$
$$+ \frac{b g \arcsin(cx) \ln\left(1 - \frac{I e\left(I c x + \sqrt{-c^2 x^2 + 1}\right)}{c d - \sqrt{d^2 c^2 - e^2}}\right)}{e^2} + \frac{b g \arcsin(cx) \ln\left(1 - \frac{I e\left(I c x + \sqrt{-c^2 x^2 + 1}\right)}{c d + \sqrt{d^2 c^2 - e^2}}\right)}{e^2}$$
$$- \frac{I b g \operatorname{polylog}\left(2, \frac{I e\left(I c x + \sqrt{-c^2 x^2 + 1}\right)}{c d - \sqrt{d^2 c^2 - e^2}}\right)}{e^2} - \frac{I b g \operatorname{polylog}\left(2, \frac{I e\left(I c x + \sqrt{-c^2 x^2 + 1}\right)}{c d + \sqrt{d^2 c^2 - e^2}}\right)}{e^2} + \frac{b c (-d g + e f) \arctan\left(\frac{c^2 d x + e}{\sqrt{d^2 c^2 - e^2} \sqrt{-c^2 x^2 + 1}}\right)}{e^2 \sqrt{d^2 c^2 - e^2}}$$

Result(type 4, 981 leaves):

$$\frac{c a d g}{e^2 (c e x + c d)} - \frac{c a f}{e (c e x + c d)} + \frac{a g \ln(c e x + c d)}{e^2} - \frac{I c^2 b g \operatorname{dilog}\left(\frac{I c d + e\left(I c x + \sqrt{-c^2 x^2 + 1}\right) + \sqrt{-d^2 c^2 + e^2}}{I c d + \sqrt{-d^2 c^2 + e^2}}\right) d^2}{e^2 (d^2 c^2 - e^2)} + \frac{c b \arcsin(cx) d g}{e^2 (c e x + c d)}$$
$$- \frac{c b \arcsin(cx) f}{e (c e x + c d)} + \frac{I b g \operatorname{dilog}\left(\frac{I c d + e\left(I c x + \sqrt{-c^2 x^2 + 1}\right) + \sqrt{-d^2 c^2 + e^2}}{I c d + \sqrt{-d^2 c^2 + e^2}}\right)}{d^2 c^2 - e^2} + \frac{I b g \operatorname{dilog}\left(\frac{I c d + e\left(I c x + \sqrt{-c^2 x^2 + 1}\right) - \sqrt{-d^2 c^2 + e^2}}{I c d - \sqrt{-d^2 c^2 + e^2}}\right)}{d^2 c^2 - e^2}$$
$$- \frac{I c^2 b g \operatorname{dilog}\left(\frac{I c d + e\left(I c x + \sqrt{-c^2 x^2 + 1}\right) - \sqrt{-d^2 c^2 + e^2}}{I c d - \sqrt{-d^2 c^2 + e^2}}\right) d^2}{e^2 (d^2 c^2 - e^2)} + \frac{c^2 b g \arcsin(cx) \ln\left(\frac{I c d + e\left(I c x + \sqrt{-c^2 x^2 + 1}\right) - \sqrt{-d^2 c^2 + e^2}}{I c d - \sqrt{-d^2 c^2 + e^2}}\right) d^2}{e^2 (d^2 c^2 - e^2)}$$
$$+ \frac{c^2 b g \arcsin(cx) \ln\left(\frac{I c d + e\left(I c x + \sqrt{-c^2 x^2 + 1}\right) + \sqrt{-d^2 c^2 + e^2}}{I c d + \sqrt{-d^2 c^2 + e^2}}\right) d^2}{e^2 (d^2 c^2 - e^2)} + \frac{2 c b f \arctan\left(\frac{2 I c d + 2 e\left(I c x + \sqrt{-c^2 x^2 + 1}\right)}{2 \sqrt{d^2 c^2 - e^2}}\right)}{e \sqrt{d^2 c^2 - e^2}}$$

$$-\frac{2cbdg\arctan\left(\frac{2Icd+2e\left(Icx+\sqrt{-c^2x^2+1}\right)}{2\sqrt{d^2c^2-e^2}}\right)}{e^2\sqrt{d^2c^2-e^2}}-\frac{Ibg\arcsin(cx)^2}{2e^2}-\frac{b\arcsin(cx)\,g\ln\left(\frac{Icd+e\left(Icx+\sqrt{-c^2x^2+1}\right)-\sqrt{-d^2c^2+e^2}}{Icd-\sqrt{-d^2c^2+e^2}}\right)}{d^2c^2-e^2}$$
$$-\frac{b\arcsin(cx)\,g\ln\left(\frac{Icd+e\left(Icx+\sqrt{-c^2x^2+1}\right)+\sqrt{-d^2c^2+e^2}}{Icd+\sqrt{-d^2c^2+e^2}}\right)}{d^2c^2-e^2}$$

Problem 28: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(hx^2+gx+f\right)(a+b\arcsin(cx))}{ex+d}\,dx$$

Optimal(type 4, 464 leaves, 15 steps):

$$-\frac{bh\arcsin(cx)}{4c^2e}-\frac{Ib\left(d^2h-deg+e^2f\right)\arcsin(cx)^2}{2e^3}+\frac{(-dh+eg)\,x\,(a+b\arcsin(cx))}{e^2}+\frac{hx^2(a+b\arcsin(cx))}{2e}$$
$$-\frac{b\left(d^2h-deg+e^2f\right)\arcsin(cx)\ln(ex+d)}{e^3}+\frac{\left(d^2h-deg+e^2f\right)(a+b\arcsin(cx))\ln(ex+d)}{e^3}$$
$$+\frac{b\left(d^2h-deg+e^2f\right)\arcsin(cx)\ln\left(1-\frac{Ie\left(Icx+\sqrt{-c^2x^2+1}\right)}{cd-\sqrt{d^2c^2-e^2}}\right)}{e^3}+\frac{b\left(d^2h-deg+e^2f\right)\arcsin(cx)\ln\left(1-\frac{Ie\left(Icx+\sqrt{-c^2x^2+1}\right)}{cd+\sqrt{d^2c^2-e^2}}\right)}{e^3}$$
$$-\frac{Ib\left(d^2h-deg+e^2f\right)\operatorname{polylog}\left(2,\frac{Ie\left(Icx+\sqrt{-c^2x^2+1}\right)}{cd-\sqrt{d^2c^2-e^2}}\right)}{e^3}-\frac{Ib\left(d^2h-deg+e^2f\right)\operatorname{polylog}\left(2,\frac{Ie\left(Icx+\sqrt{-c^2x^2+1}\right)}{cd+\sqrt{d^2c^2-e^2}}\right)}{e^3}$$
$$+\frac{b(ehx-4dh+4eg)\sqrt{-c^2x^2+1}}{4ce^2}$$

Result(type ?, 2476 leaves): Display of huge result suppressed!

Problem 29: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(hx^2+gx+f\right)(a+b\arcsin(cx))}{(ex+d)^2}\,dx$$

Optimal(type 4, 467 leaves, 16 steps):

$$-\frac{Ib(-2dh+eg)\arcsin(cx)^2}{2e^3}+\frac{hx(a+b\arcsin(cx))}{e^2}-\frac{\left(d^2h-deg+e^2f\right)(a+b\arcsin(cx))}{e^3(ex+d)}-\frac{b(-2dh+eg)\arcsin(cx)\ln(ex+d)}{e^3}$$

$$+\frac{(-2dh+eg)(a+b\arcsin(cx))\ln(ex+d)}{e^3}+\frac{b(-2dh+eg)\arcsin(cx)\ln\left(1-\frac{Ie\left(Icx+\sqrt{-c^2x^2+1}\right)}{cd-\sqrt{d^2c^2-e^2}}\right)}{e^3}$$

$$+\frac{b(-2dh+eg)\arcsin(cx)\ln\left(1-\frac{Ie\left(Icx+\sqrt{-c^2x^2+1}\right)}{cd+\sqrt{d^2c^2-e^2}}\right)}{e^3}-\frac{Ib(-2dh+eg)\operatorname{polylog}\left(2,\frac{Ie\left(Icx+\sqrt{-c^2x^2+1}\right)}{cd-\sqrt{d^2c^2-e^2}}\right)}{e^3}$$

$$-\frac{Ib(-2dh+eg)\operatorname{polylog}\left(2,\frac{Ie\left(Icx+\sqrt{-c^2x^2+1}\right)}{cd+\sqrt{d^2c^2-e^2}}\right)}{e^3}+\frac{bc(d^2h-deg+e^2f)\arctan\left(\frac{c^2dx+e}{\sqrt{d^2c^2-e^2}\sqrt{-c^2x^2+1}}\right)}{e^3\sqrt{d^2c^2-e^2}}+\frac{bh\sqrt{-c^2x^2+1}}{ce^2}$$

Result(type 4, 1921 leaves):

$$\frac{Ib\arcsin(cx)^2dh}{e^3}+\frac{2cbd^2h\arctan\left(\frac{2Icd+2e\left(Icx+\sqrt{-c^2x^2+1}\right)}{2\sqrt{d^2c^2-e^2}}\right)}{e^3\sqrt{d^2c^2-e^2}}-\frac{cb\arcsin(cx)d^2h}{e^3(cex+cd)}$$

$$+\frac{2bdh\arcsin(cx)\ln\left(\frac{Icd+e\left(Icx+\sqrt{-c^2x^2+1}\right)+\sqrt{-d^2c^2+e^2}}{Icd+\sqrt{-d^2c^2+e^2}}\right)}{e(d^2c^2-e^2)}+\frac{2bdh\arcsin(cx)\ln\left(\frac{Icd+e\left(Icx+\sqrt{-c^2x^2+1}\right)-\sqrt{-d^2c^2+e^2}}{Icd-\sqrt{-d^2c^2+e^2}}\right)}{e(d^2c^2-e^2)}$$

$$-\frac{2Ibdh\operatorname{dilog}\left(\frac{Icd+e\left(Icx+\sqrt{-c^2x^2+1}\right)+\sqrt{-d^2c^2+e^2}}{Icd+\sqrt{-d^2c^2+e^2}}\right)}{e(d^2c^2-e^2)}-\frac{2Ibdh\operatorname{dilog}\left(\frac{Icd+e\left(Icx+\sqrt{-c^2x^2+1}\right)-\sqrt{-d^2c^2+e^2}}{Icd-\sqrt{-d^2c^2+e^2}}\right)}{e(d^2c^2-e^2)}$$

$$-\frac{Ibg\arcsin(cx)^2}{2e^2}-\frac{Ic^2bg\operatorname{dilog}\left(\frac{Icd+e\left(Icx+\sqrt{-c^2x^2+1}\right)-\sqrt{-d^2c^2+e^2}}{Icd-\sqrt{-d^2c^2+e^2}}\right)d^2}{e^2(d^2c^2-e^2)}$$

$$+\frac{c^2bg\arcsin(cx)\ln\left(\frac{Icd+e\left(Icx+\sqrt{-c^2x^2+1}\right)-\sqrt{-d^2c^2+e^2}}{Icd-\sqrt{-d^2c^2+e^2}}\right)d^2}{e^2(d^2c^2-e^2)}+\frac{c^2bg\arcsin(cx)\ln\left(\frac{Icd+e\left(Icx+\sqrt{-c^2x^2+1}\right)+\sqrt{-d^2c^2+e^2}}{Icd+\sqrt{-d^2c^2+e^2}}\right)d^2}{e^2(d^2c^2-e^2)}$$

$$+\frac{cb\arcsin(cx)dg}{e^2(cex+cd)}-\frac{2cbdg\arctan\left(\frac{2Icd+2e\left(Icx+\sqrt{-c^2x^2+1}\right)}{2\sqrt{d^2c^2-e^2}}\right)}{e^2\sqrt{d^2c^2-e^2}}+\frac{ag\ln(cex+cd)}{e^2}-\frac{caf}{e(cex+cd)}$$

$$+\frac{I b g \,\mathrm{dilog}\left(\frac{I c d + e\left(I c x+\sqrt{-c^2 x^2+1}\right)+\sqrt{-d^2 c^2+e^2}}{I c d+\sqrt{-d^2 c^2+e^2}}\right)}{d^2 c^2-e^2}+\frac{I b g \,\mathrm{dilog}\left(\frac{I c d + e\left(I c x+\sqrt{-c^2 x^2+1}\right)-\sqrt{-d^2 c^2+e^2}}{I c d-\sqrt{-d^2 c^2+e^2}}\right)}{d^2 c^2-e^2}$$

$$-\frac{b \arcsin(c x)\, g \ln\left(\frac{I c d + e\left(I c x+\sqrt{-c^2 x^2+1}\right)-\sqrt{-d^2 c^2+e^2}}{I c d-\sqrt{-d^2 c^2+e^2}}\right)}{d^2 c^2-e^2}-\frac{b \arcsin(c x)\, g \ln\left(\frac{I c d + e\left(I c x+\sqrt{-c^2 x^2+1}\right)+\sqrt{-d^2 c^2+e^2}}{I c d+\sqrt{-d^2 c^2+e^2}}\right)}{d^2 c^2-e^2}$$

$$+\frac{c a d g}{e^2 (c e x+c d)}-\frac{c b \arcsin(c x) f}{e (c e x+c d)}+\frac{2 c b f \arctan\left(\frac{2 I c d+2 e\left(I c x+\sqrt{-c^2 x^2+1}\right)}{2 \sqrt{d^2 c^2-e^2}}\right)}{e \sqrt{d^2 c^2-e^2}}$$

$$-\frac{2 c^2 b d^3 h \arcsin(c x) \ln\left(\frac{I c d + e\left(I c x+\sqrt{-c^2 x^2+1}\right)-\sqrt{-d^2 c^2+e^2}}{I c d-\sqrt{-d^2 c^2+e^2}}\right)}{e^3 (d^2 c^2-e^2)}$$

$$-\frac{2 c^2 b d^3 h \arcsin(c x) \ln\left(\frac{I c d + e\left(I c x+\sqrt{-c^2 x^2+1}\right)+\sqrt{-d^2 c^2+e^2}}{I c d+\sqrt{-d^2 c^2+e^2}}\right)}{e^3 (d^2 c^2-e^2)}+\frac{2 I c^2 b d^3 h \,\mathrm{dilog}\left(\frac{I c d + e\left(I c x+\sqrt{-c^2 x^2+1}\right)+\sqrt{-d^2 c^2+e^2}}{I c d+\sqrt{-d^2 c^2+e^2}}\right)}{e^3 (d^2 c^2-e^2)}$$

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

$$+\frac{b \arcsin(c x)\, h x}{e^2}-\frac{I c^2 b g \,\mathrm{dilog}\left(\frac{I c d + e\left(I c x+\sqrt{-c^2 x^2+1}\right)+\sqrt{-d^2 c^2+e^2}}{I c d+\sqrt{-d^2 c^2+e^2}}\right) d^2}{e^2 (d^2 c^2-e^2)}+\frac{a h x}{e^2}$$

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Problem 30: Result more than twice size of optimal antiderivative.
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$$\int \frac{(h x^2+g x+f)\,(a+b \arcsin(c x))}{(e x+d)^3}\, dx$$

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Optimal(type 4, 489 leaves, 16 steps):
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$$-\frac{I b h \arcsin(c x)^2}{2 e^3}-\frac{(d^2 h-d e g+e^2 f)\,(a+b \arcsin(c x))}{2 e^3 (e x+d)^2}-\frac{(-2 d h+e g)\,(a+b \arcsin(c x))}{e^3 (e x+d)}$$

$$-\frac{b c \left(2 e^2 (-2 d h+e g)-c^2 d \left(-3 d^2 h+d e g+e^2 f\right)\right) \arctan\left(\frac{c^2 d x+e}{\sqrt{d^2 c^2-e^2}\,\sqrt{-c^2 x^2+1}}\right)}{2 e^3 (d^2 c^2-e^2)^{3/2}}-\frac{b h \arcsin(c x) \ln(e x+d)}{e^3}$$

$$+\frac{h\,(a+b\arcsin(cx))\ln(ex+d)}{e^3}+\frac{b\,h\arcsin(cx)\ln\left(1-\frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd-\sqrt{d^2c^2-e^2}}\right)}{e^3}+\frac{b\,h\arcsin(cx)\ln\left(1-\frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd+\sqrt{d^2c^2-e^2}}\right)}{e^3}$$

$$-\frac{I\,b\,h\operatorname{polylog}\left(2,\frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd-\sqrt{d^2c^2-e^2}}\right)}{e^3}-\frac{I\,b\,h\operatorname{polylog}\left(2,\frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd+\sqrt{d^2c^2-e^2}}\right)}{e^3}+\frac{b\,c\left(d^2h-deg+e^2f\right)\sqrt{-c^2x^2+1}}{2e^2\left(d^2c^2-e^2\right)(ex+d)}$$

Result(type ?, 2705 leaves): Display of huge result suppressed!

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

$$\int\frac{(gx+f)\,(a+b\arcsin(cx))^2}{(ex+d)^3}\,dx$$

Optimal(type 4, 941 leaves, 33 steps):

$$\frac{a\,b\,g^2\arcsin(cx)}{e^2(-dg+ef)}+\frac{b^2g^2\arcsin(cx)^2}{2e^2(-dg+ef)}-\frac{(gx+f)^2(a+b\arcsin(cx))^2}{2(-dg+ef)(ex+d)^2}-\frac{a\,b\,c\left(2e^2g-c^2d(dg+ef)\right)\arctan\left(\frac{c^2dx+e}{\sqrt{d^2c^2-e^2}\sqrt{-c^2x^2+1}}\right)}{e^2\left(d^2c^2-e^2\right)^{3/2}}$$

$$-\frac{b^2c^2(-dg+ef)\ln(ex+d)}{e^2\left(d^2c^2-e^2\right)}-\frac{I\,b^2c^3d\,(-dg+ef)\arcsin(cx)\ln\left(1-\frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd-\sqrt{d^2c^2-e^2}}\right)}{e^2\left(d^2c^2-e^2\right)^{3/2}}$$

$$+\frac{I\,b^2c^3d\,(-dg+ef)\arcsin(cx)\ln\left(1-\frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd+\sqrt{d^2c^2-e^2}}\right)}{e^2\left(d^2c^2-e^2\right)^{3/2}}-\frac{b^2c^3d\,(-dg+ef)\operatorname{polylog}\left(2,\frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd-\sqrt{d^2c^2-e^2}}\right)}{e^2\left(d^2c^2-e^2\right)^{3/2}}$$

$$+\frac{b^2c^3d\,(-dg+ef)\operatorname{polylog}\left(2,\frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd+\sqrt{d^2c^2-e^2}}\right)}{e^2\left(d^2c^2-e^2\right)^{3/2}}-\frac{2I\,b^2c\,g\arcsin(cx)\ln\left(1-\frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd-\sqrt{d^2c^2-e^2}}\right)}{e^2\sqrt{d^2c^2-e^2}}$$

$$+\frac{2I\,b^2c\,g\arcsin(cx)\ln\left(1-\frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd+\sqrt{d^2c^2-e^2}}\right)}{e^2\sqrt{d^2c^2-e^2}}-\frac{2b^2c\,g\operatorname{polylog}\left(2,\frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd-\sqrt{d^2c^2-e^2}}\right)}{e^2\sqrt{d^2c^2-e^2}}$$

$$+\frac{2b^2c\,g\operatorname{polylog}\left(2,\frac{I e\left(I c x+\sqrt{-c^2x^2+1}\right)}{cd+\sqrt{d^2c^2-e^2}}\right)}{e^2\sqrt{d^2c^2-e^2}}+\frac{a\,b\,c\,(-dg+ef)\sqrt{-c^2x^2+1}}{e\left(d^2c^2-e^2\right)(ex+d)}+\frac{b^2c\,(-dg+ef)\arcsin(cx)\sqrt{-c^2x^2+1}}{e\left(d^2c^2-e^2\right)(ex+d)}$$

Result(type ?, 3104 leaves): Display of huge result suppressed!

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

$$\int (hx+g)\left(x^2 f+ex+d\right)(a+b\arcsin(cx))^2\,dx$$

Optimal(type 3, 383 leaves, 20 steps):

$$-2b^2dgx-\frac{4b^2(eh+fg)x}{9c^2}-\frac{3b^2fhx^2}{32c^2}-\frac{b^2(dh+eg)x^2}{4}-\frac{2b^2(eh+fg)x^3}{27}-\frac{b^2fhx^4}{32}-\frac{3fh(a+b\arcsin(cx))^2}{32c^4}$$
$$-\frac{(dh+eg)(a+b\arcsin(cx))^2}{4c^2}+dgx(a+b\arcsin(cx))^2+\frac{(dh+eg)x^2(a+b\arcsin(cx))^2}{2}+\frac{(eh+fg)x^3(a+b\arcsin(cx))^2}{3}$$
$$+\frac{fhx^4(a+b\arcsin(cx))^2}{4}+\frac{2bdg(a+b\arcsin(cx))\sqrt{-c^2x^2+1}}{c}+\frac{4b(eh+fg)(a+b\arcsin(cx))\sqrt{-c^2x^2+1}}{9c^3}$$
$$+\frac{3bfhx(a+b\arcsin(cx))\sqrt{-c^2x^2+1}}{16c^3}+\frac{b(dh+eg)x(a+b\arcsin(cx))\sqrt{-c^2x^2+1}}{2c}+\frac{2b(eh+fg)x^2(a+b\arcsin(cx))\sqrt{-c^2x^2+1}}{9c}$$
$$+\frac{bfhx^3(a+b\arcsin(cx))\sqrt{-c^2x^2+1}}{8c}$$

Result(type 3, 869 leaves):

$$\frac{1}{c}\left(\frac{a^2\left(\frac{hfc^4x^4}{4}+\frac{(hce+cfg)c^3x^3}{3}+\frac{(hc^2d+c^2eg)c^2x^2}{2}+c^4gdx\right)}{c^3}\right.$$

$$+\frac{1}{c^3}\left(b^2\left(\frac{1}{32}\left(hf\left(8\arcsin(cx)^2x^4c^4+4\arcsin(cx)\sqrt{-c^2x^2+1}\,x^3c^3-16\arcsin(cx)^2x^2c^2-c^4x^4-10\arcsin(cx)\sqrt{-c^2x^2+1}\,xc\right.\right.\right.\right.$$

$$\left.\left.+5\arcsin(cx)^2+5c^2x^2-4\right)\right)+\frac{hc^2d\left(2\arcsin(cx)^2x^2c^2+2\arcsin(cx)\sqrt{-c^2x^2+1}\,xc-\arcsin(cx)^2-c^2x^2\right)}{4}$$

$$+\frac{c^2eg\left(2\arcsin(cx)^2x^2c^2+2\arcsin(cx)\sqrt{-c^2x^2+1}\,xc-\arcsin(cx)^2-c^2x^2\right)}{4}$$

$$+\frac{hce\left(9\arcsin(cx)^2c^3x^3+6\sqrt{-c^2x^2+1}\arcsin(cx)c^2x^2-27cx\arcsin(cx)^2-2c^3x^3-42\arcsin(cx)\sqrt{-c^2x^2+1}+42cx\right)}{27}$$

$$+\frac{cfg\left(9\arcsin(cx)^2c^3x^3+6\sqrt{-c^2x^2+1}\arcsin(cx)\,c^2x^2-27\,cx\arcsin(cx)^2-2\,c^3x^3-42\arcsin(cx)\sqrt{-c^2x^2+1}+42\,cx\right)}{27}+c^3gd\left(cx\arcsin(cx)^2\right.$$

$$\left.-2\,cx+2\arcsin(cx)\sqrt{-c^2x^2+1}\right)+\frac{hf\left(2\arcsin(cx)^2x^2c^2+2\arcsin(cx)\sqrt{-c^2x^2+1}\,xc-\arcsin(cx)^2-c^2x^2\right)}{4}+hce\left(cx\arcsin(cx)^2-2\,cx\right.$$

$$\left.\left.\left.+2\arcsin(cx)\sqrt{-c^2x^2+1}\right)+cfg\left(cx\arcsin(cx)^2-2\,cx+2\arcsin(cx)\sqrt{-c^2x^2+1}\right)\right)\right)+\frac{1}{c^3}\left(2ab\left(\frac{\arcsin(cx)\,hfc^4x^4}{4}\right.\right.$$

$$+\frac{\arcsin(cx)\,c^4x^3eh}{3}+\frac{\arcsin(cx)\,x^3c^4fg}{3}+\frac{\arcsin(cx)\,c^4x^2dh}{2}+\frac{\arcsin(cx)\,c^4x^2eg}{2}+\arcsin(cx)\,c^4gdx$$

$$-\frac{(6hc^2d+6c^2eg)\left(-\frac{cx\sqrt{-c^2x^2+1}}{2}+\frac{\arcsin(cx)}{2}\right)}{12}-\frac{(4hce+4cfg)\left(-\frac{c^2x^2\sqrt{-c^2x^2+1}}{3}-\frac{2\sqrt{-c^2x^2+1}}{3}\right)}{12}$$

$$\left.\left.\left.-\frac{hf\left(-\frac{\sqrt{-c^2x^2+1}\,x^3c^3}{4}-\frac{3\,cx\sqrt{-c^2x^2+1}}{8}+\frac{3\arcsin(cx)}{8}\right)}{4}+c^3gd\sqrt{-c^2x^2+1}\right)\right)\right)$$

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Problem 33: Unable to integrate problem.
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$$\int\frac{(fx^2+ex+d)\,(a+b\arcsin(cx))^2}{hx+g}\,dx$$

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Optimal(type 4, 1087 leaves, 38 steps):
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$$\frac{b^2fx\arcsin(cx)\sqrt{-c^2x^2+1}}{2ch}+\frac{2ab\,(dh^2-egh+fg^2)\arcsin(cx)\ln\left(1-\frac{I\left(Icx+\sqrt{-c^2x^2+1}\right)h}{cg-\sqrt{c^2g^2-h^2}}\right)}{h^3}$$

$$+\frac{2ab\,(dh^2-egh+fg^2)\arcsin(cx)\ln\left(1-\frac{I\left(Icx+\sqrt{-c^2x^2+1}\right)h}{cg+\sqrt{c^2g^2-h^2}}\right)}{h^3}-\frac{ab\,(-fhx-4eh+4fg)\sqrt{-c^2x^2+1}}{2ch^2}$$

$$-\frac{2b^2\,(-eh+fg)\arcsin(cx)\sqrt{-c^2x^2+1}}{ch^2}-\frac{2Iab\,(dh^2-egh+fg^2)\,\mathrm{polylog}\left(2,\frac{I\left(Icx+\sqrt{-c^2x^2+1}\right)h}{cg-\sqrt{c^2g^2-h^2}}\right)}{h^3}$$

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

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

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

$$+\frac{a^2 (d h^2 - e g h + f g^2) \ln(h x + g)}{h^3} - \frac{b^2 f \arcsin(c x)^2}{4 c^2 h} + \frac{b^2 f x^2 \arcsin(c x)^2}{2 h} - \frac{I b^2 (d h^2 - e g h + f g^2) \arcsin(c x)^3}{3 h^3}$$

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

$$+\frac{a b f x^2 \arcsin(c x)}{h} - \frac{b^2 (-e h + f g) x \arcsin(c x)^2}{h^2} - \frac{a^2 (-e h + f g) x}{h^2} - \frac{a b f \arcsin(c x)}{2 c^2 h} - \frac{2 a b (-e h + f g) x \arcsin(c x)}{h^2}$$

$$-\frac{I a b (d h^2 - e g h + f g^2) \arcsin(c x)^2}{h^3}$$

Result(type 8, 30 leaves):

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

Problem 34: Unable to integrate problem.

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

Optimal(type 4, 1365 leaves, 45 steps):

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

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

$$+\frac{2 I b^2 (-eh+2fg) \arcsin(cx) \operatorname{polylog}\left(2, \frac{I\left(Icx+\sqrt{-c^2x^2+1}\right)h}{cg+\sqrt{c^2g^2-h^2}}\right)}{h^3} - \frac{2ab(-eh+2fg)\arcsin(cx)\ln\left(1-\frac{I\left(Icx+\sqrt{-c^2x^2+1}\right)h}{cg-\sqrt{c^2g^2-h^2}}\right)}{h^3}$$

$$-\frac{2ab(-eh+2fg)\arcsin(cx)\ln\left(1-\frac{I\left(Icx+\sqrt{-c^2x^2+1}\right)h}{cg+\sqrt{c^2g^2-h^2}}\right)}{h^3} - \frac{2b^2c\left(dh^2-egh+fg^2\right)\operatorname{polylog}\left(2, \frac{I\left(Icx+\sqrt{-c^2x^2+1}\right)h}{cg-\sqrt{c^2g^2-h^2}}\right)}{h^3\sqrt{c^2g^2-h^2}}$$

$$+\frac{2b^2c\left(dh^2-egh+fg^2\right)\operatorname{polylog}\left(2, \frac{I\left(Icx+\sqrt{-c^2x^2+1}\right)h}{cg+\sqrt{c^2g^2-h^2}}\right)}{h^3\sqrt{c^2g^2-h^2}} + \frac{2abf\sqrt{-c^2x^2+1}}{ch^2} + \frac{2b^2f\arcsin(cx)\sqrt{-c^2x^2+1}}{ch^2} - \frac{2b^2fx}{h^2}$$

$$-\frac{a^2\left(dh^2-egh+fg^2\right)}{h^3(hx+g)} - \frac{2b^2(-eh+2fg)\operatorname{polylog}\left(3, \frac{I\left(Icx+\sqrt{-c^2x^2+1}\right)h}{cg-\sqrt{c^2g^2-h^2}}\right)}{h^3} - \frac{2b^2(-eh+2fg)\operatorname{polylog}\left(3, \frac{I\left(Icx+\sqrt{-c^2x^2+1}\right)h}{cg+\sqrt{c^2g^2-h^2}}\right)}{h^3}$$

$$-\frac{a^2(-eh+2fg)\ln(hx+g)}{h^3} + \frac{2Ib^2c\left(dh^2-egh+fg^2\right)\arcsin(cx)\ln\left(1-\frac{I\left(Icx+\sqrt{-c^2x^2+1}\right)h}{cg+\sqrt{c^2g^2-h^2}}\right)}{h^3\sqrt{c^2g^2-h^2}}$$

$$-\frac{2Ib^2c\left(dh^2-egh+fg^2\right)\arcsin(cx)\ln\left(1-\frac{I\left(Icx+\sqrt{-c^2x^2+1}\right)h}{cg-\sqrt{c^2g^2-h^2}}\right)}{h^3\sqrt{c^2g^2-h^2}} - \frac{b^2\left(dh^2-egh+fg^2\right)\arcsin(cx)^2}{h^3(hx+g)}$$

$$-\frac{b^2(-eh+2fg)\arcsin(cx)^2\ln\left(1-\frac{I\left(Icx+\sqrt{-c^2x^2+1}\right)h}{cg-\sqrt{c^2g^2-h^2}}\right)}{h^3} - \frac{b^2(-eh+2fg)\arcsin(cx)^2\ln\left(1-\frac{I\left(Icx+\sqrt{-c^2x^2+1}\right)h}{cg+\sqrt{c^2g^2-h^2}}\right)}{h^3}$$

$$+\frac{Iab(-eh+2fg)\arcsin(cx)^2}{h^3} + \frac{b^2fx\arcsin(cx)^2}{h^2} + \frac{a^2fx}{h^2} + \frac{Ib^2(-eh+2fg)\arcsin(cx)^3}{3h^3} + \frac{2abfx\arcsin(cx)}{h^2}$$

$$-\frac{2ab\left(dh^2-egh+fg^2\right)\arcsin(cx)}{h^3(hx+g)}$$

Result(type 8, 30 leaves):

$$\int \frac{\left(fx^2+ex+d\right)\left(a+b\arcsin(cx)\right)^2}{(hx+g)^2}\, dx$$

Problem 35: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 520 leaves, 20 steps):

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

Result(type 4, 1404 leaves):

$$\frac{a^2 h x}{e}+\frac{c a^2 d^2 h}{e^2 (c e x+c d)}-\frac{c a^2 f}{c e x+c d}+\frac{2 b^2 h \arcsin(c x) \sqrt{-c^2 x^2+1}}{c e}+\frac{b^2 h \arcsin(c x)^2 x}{e}-\frac{2 b^2 h x}{e}+\frac{c b^2 \arcsin(c x)^2 d^2 h}{e^2 (c e x+c d)}-\frac{c b^2 \arcsin(c x)^2 f}{c e x+c d}$$
$$+\frac{2 c b^2 \sqrt{-d^2 c^2+e^2}\, \arcsin(c x) \ln\left(\frac{I c d+e \left(I c x+\sqrt{-c^2 x^2+1}\right)-\sqrt{-d^2 c^2+e^2}}{I c d-\sqrt{-d^2 c^2+e^2}}\right) d^2 h}{e^2 \left(d^2 c^2-e^2\right)}$$
$$-\frac{2 c b^2 \sqrt{-d^2 c^2+e^2}\, \arcsin(c x) \ln\left(\frac{I c d+e \left(I c x+\sqrt{-c^2 x^2+1}\right)-\sqrt{-d^2 c^2+e^2}}{I c d-\sqrt{-d^2 c^2+e^2}}\right) f}{d^2 c^2-e^2}$$
$$-\frac{2 c b^2 \sqrt{-d^2 c^2+e^2}\, \arcsin(c x) \ln\left(\frac{I c d+e \left(I c x+\sqrt{-c^2 x^2+1}\right)+\sqrt{-d^2 c^2+e^2}}{I c d+\sqrt{-d^2 c^2+e^2}}\right) d^2 h}{e^2 \left(d^2 c^2-e^2\right)}$$
$$+\frac{2 c b^2 \sqrt{-d^2 c^2+e^2}\, \arcsin(c x) \ln\left(\frac{I c d+e \left(I c x+\sqrt{-c^2 x^2+1}\right)+\sqrt{-d^2 c^2+e^2}}{I c d+\sqrt{-d^2 c^2+e^2}}\right) f}{d^2 c^2-e^2}$$

$$- \frac{2 I c b^2 \sqrt{-d^2 c^2 + e^2}\, \mathrm{dilog}\left(\frac{I c d + e\left(I c x + \sqrt{-c^2 x^2 + 1}\right) - \sqrt{-d^2 c^2 + e^2}}{I c d - \sqrt{-d^2 c^2 + e^2}}\right) h d^2}{e^2 (d^2 c^2 - e^2)}$$

$$+ \frac{2 I c b^2 \sqrt{-d^2 c^2 + e^2}\, \mathrm{dilog}\left(\frac{I c d + e\left(I c x + \sqrt{-c^2 x^2 + 1}\right) - \sqrt{-d^2 c^2 + e^2}}{I c d - \sqrt{-d^2 c^2 + e^2}}\right) f}{d^2 c^2 - e^2}$$

$$- \frac{2 I c b^2 \sqrt{-d^2 c^2 + e^2}\, \mathrm{dilog}\left(\frac{I c d + e\left(I c x + \sqrt{-c^2 x^2 + 1}\right) + \sqrt{-d^2 c^2 + e^2}}{I c d + \sqrt{-d^2 c^2 + e^2}}\right) f}{d^2 c^2 - e^2}$$

$$+ \frac{2 I c b^2 \sqrt{-d^2 c^2 + e^2}\, \mathrm{dilog}\left(\frac{I c d + e\left(I c x + \sqrt{-c^2 x^2 + 1}\right) + \sqrt{-d^2 c^2 + e^2}}{I c d + \sqrt{-d^2 c^2 + e^2}}\right) h d^2}{e^2 (d^2 c^2 - e^2)} + \frac{2 a b \arcsin(c x)\, h x}{e} + \frac{2 c a b \arcsin(c x)\, d^2 h}{e^2 (c e x + c d)}$$

$$- \frac{2 c a b \arcsin(c x)\, f}{c e x + c d}$$

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

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

$$+ \frac{2 a b h \sqrt{-c^2 x^2 + 1}}{c e}$$

Problem 38: Result more than twice size of optimal antiderivative.

$$\int \frac{\arcsin(b x + a)}{x}\, dx$$

Optimal(type 4, 204 leaves, 9 steps):

$$-\frac{I\arcsin(bx+a)^2}{2}+\arcsin(bx+a)\ln\left(1-\frac{I(bx+a)+\sqrt{1-(bx+a)^2}}{Ia-\sqrt{-a^2+1}}\right)+\arcsin(bx+a)\ln\left(1-\frac{I(bx+a)+\sqrt{1-(bx+a)^2}}{Ia+\sqrt{-a^2+1}}\right)-I\,\mathrm{polylog}\left(2,\frac{I(bx+a)+\sqrt{1-(bx+a)^2}}{Ia-\sqrt{-a^2+1}}\right)-I\,\mathrm{polylog}\left(2,\frac{I(bx+a)+\sqrt{1-(bx+a)^2}}{Ia+\sqrt{-a^2+1}}\right)$$

Result(type 4, 578 leaves):

$$-\frac{I\arcsin(bx+a)^2}{2}-\frac{\arcsin(bx+a)\ln\left(\frac{Ia+\sqrt{-a^2+1}-I(bx+a)-\sqrt{1-(bx+a)^2}}{Ia+\sqrt{-a^2+1}}\right)}{a^2-1}$$
$$-\frac{\arcsin(bx+a)\ln\left(\frac{Ia-\sqrt{-a^2+1}-I(bx+a)-\sqrt{1-(bx+a)^2}}{Ia-\sqrt{-a^2+1}}\right)}{a^2-1}+\frac{I\,\mathrm{dilog}\left(\frac{Ia+\sqrt{-a^2+1}-I(bx+a)-\sqrt{1-(bx+a)^2}}{Ia+\sqrt{-a^2+1}}\right)}{a^2-1}$$
$$+\frac{I\,\mathrm{dilog}\left(\frac{Ia-\sqrt{-a^2+1}-I(bx+a)-\sqrt{1-(bx+a)^2}}{Ia-\sqrt{-a^2+1}}\right)}{a^2-1}-\frac{I\,\mathrm{dilog}\left(\frac{Ia+\sqrt{-a^2+1}-I(bx+a)-\sqrt{1-(bx+a)^2}}{Ia+\sqrt{-a^2+1}}\right)a^2}{a^2-1}$$
$$-\frac{I\,\mathrm{dilog}\left(\frac{Ia-\sqrt{-a^2+1}-I(bx+a)-\sqrt{1-(bx+a)^2}}{Ia-\sqrt{-a^2+1}}\right)a^2}{a^2-1}+\frac{\arcsin(bx+a)\ln\left(\frac{Ia+\sqrt{-a^2+1}-I(bx+a)-\sqrt{1-(bx+a)^2}}{Ia+\sqrt{-a^2+1}}\right)a^2}{a^2-1}$$
$$+\frac{\arcsin(bx+a)\ln\left(\frac{Ia-\sqrt{-a^2+1}-I(bx+a)-\sqrt{1-(bx+a)^2}}{Ia-\sqrt{-a^2+1}}\right)a^2}{a^2-1}$$

Problem 41: Unable to integrate problem.

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

Optimal(type 4, 342 leaves, 13 steps):

$$-\frac{\arcsin(bx+a)^3}{x}+\frac{3Ib\arcsin(bx+a)^2\ln\left(1+\frac{I\left(I(bx+a)+\sqrt{1-(bx+a)^2}\right)}{a-\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}$$

$$-\frac{3 I b \arcsin(b x+a)^2 \ln\left(1+\frac{I\left(I (b x+a)+\sqrt{1-(b x+a)^2}\right)}{a+\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}+\frac{6 b \arcsin(b x+a) \operatorname{polylog}\left(2, \frac{-I\left(I (b x+a)+\sqrt{1-(b x+a)^2}\right)}{a-\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}$$

$$-\frac{6 b \arcsin(b x+a) \operatorname{polylog}\left(2, \frac{-I\left(I (b x+a)+\sqrt{1-(b x+a)^2}\right)}{a+\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}+\frac{6 I b \operatorname{polylog}\left(3, \frac{-I\left(I (b x+a)+\sqrt{1-(b x+a)^2}\right)}{a-\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}$$

$$-\frac{6 I b \operatorname{polylog}\left(3, \frac{-I\left(I (b x+a)+\sqrt{1-(b x+a)^2}\right)}{a+\sqrt{a^2-1}}\right)}{\sqrt{a^2-1}}$$

Result(type 8, 14 leaves):

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

Problem 53: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b \arcsin(d x+c))^3}{(d e x+c e)^4}\, dx$$

Optimal(type 4, 331 leaves, 16 steps):

$$-\frac{b^2 (a+b \arcsin(d x+c))}{d e^4 (d x+c)}-\frac{(a+b \arcsin(d x+c))^3}{3 d e^4 (d x+c)^3}-\frac{b (a+b \arcsin(d x+c))^2 \operatorname{arctanh}\left(I (d x+c)+\sqrt{1-(d x+c)^2}\right)}{d e^4}$$

$$-\frac{b^3 \operatorname{arctanh}\left(\sqrt{1-(d x+c)^2}\right)}{d e^4}+\frac{I b^2 (a+b \arcsin(d x+c)) \operatorname{polylog}\left(2, -I (d x+c)-\sqrt{1-(d x+c)^2}\right)}{d e^4}$$

$$-\frac{I b^2 (a+b \arcsin(d x+c)) \operatorname{polylog}\left(2, I (d x+c)+\sqrt{1-(d x+c)^2}\right)}{d e^4}-\frac{b^3 \operatorname{polylog}\left(3, -I (d x+c)-\sqrt{1-(d x+c)^2}\right)}{d e^4}$$

$$+\frac{b^3 \operatorname{polylog}\left(3, I (d x+c)+\sqrt{1-(d x+c)^2}\right)}{d e^4}-\frac{b (a+b \arcsin(d x+c))^2 \sqrt{1-(d x+c)^2}}{2 d e^4 (d x+c)^2}$$

Result(type 4, 715 leaves):

$$-\frac{a^3}{3 d e^4 (d x+c)^3}-\frac{b^3 \arcsin(d x+c)^2 \sqrt{1-(d x+c)^2}}{2 d e^4 (d x+c)^2}-\frac{b^3 \arcsin(d x+c)^3}{3 d e^4 (d x+c)^3}-\frac{b^3 \arcsin(d x+c)}{d e^4 (d x+c)}$$

$$+\frac{b^3 \arcsin(d x+c)^2 \ln\left(1-I (d x+c)-\sqrt{1-(d x+c)^2}\right)}{2 d e^4}-\frac{I b^3 \arcsin(d x+c) \operatorname{polylog}\left(2, I (d x+c)+\sqrt{1-(d x+c)^2}\right)}{d e^4}$$

$$+\frac{b^3 \operatorname{polylog}\left(3, \mathrm{I}\,(d x+c)+\sqrt{1-(d x+c)^2}\right)}{d e^4}-\frac{b^3 \arcsin(d x+c)^2 \ln\left(1+\mathrm{I}\,(d x+c)+\sqrt{1-(d x+c)^2}\right)}{2 d e^4}$$

$$+\frac{\mathrm{I}\, a b^2 \operatorname{polylog}\left(2, -\mathrm{I}\,(d x+c)-\sqrt{1-(d x+c)^2}\right)}{d e^4}-\frac{b^3 \operatorname{polylog}\left(3, -\mathrm{I}\,(d x+c)-\sqrt{1-(d x+c)^2}\right)}{d e^4}$$

$$-\frac{2 b^3 \operatorname{arctanh}\left(\mathrm{I}\,(d x+c)+\sqrt{1-(d x+c)^2}\right)}{d e^4}-\frac{a b^2 \sqrt{1-(d x+c)^2} \arcsin(d x+c)}{d e^4 (d x+c)^2}-\frac{a b^2 \arcsin(d x+c)^2}{d e^4 (d x+c)^3}-\frac{a b^2}{d e^4 (d x+c)}$$

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

$$-\frac{a b^2 \arcsin(d x+c) \ln\left(1+\mathrm{I}\,(d x+c)+\sqrt{1-(d x+c)^2}\right)}{d e^4}+\frac{\mathrm{I}\, b^3 \arcsin(d x+c) \operatorname{polylog}\left(2, -\mathrm{I}\,(d x+c)-\sqrt{1-(d x+c)^2}\right)}{d e^4}$$

$$-\frac{a^2 b \arcsin(d x+c)}{d e^4 (d x+c)^3}-\frac{a^2 b \sqrt{1-(d x+c)^2}}{2 d e^4 (d x+c)^2}-\frac{a^2 b \operatorname{arctanh}\left(\frac{1}{\sqrt{1-(d x+c)^2}}\right)}{2 d e^4}$$

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

$$\int (d e x+c e)\,(a+b \arcsin(d x+c))^4\, dx$$

Optimal(type 3, 182 leaves, 9 steps):

$$\frac{3 b^4 e (d x+c)^2}{4 d}+\frac{3 b^2 e (a+b \arcsin(d x+c))^2}{4 d}-\frac{3 b^2 e (d x+c)^2 (a+b \arcsin(d x+c))^2}{2 d}-\frac{e (a+b \arcsin(d x+c))^4}{4 d}$$

$$+\frac{e (d x+c)^2 (a+b \arcsin(d x+c))^4}{2 d}-\frac{3 b^3 e (d x+c) (a+b \arcsin(d x+c)) \sqrt{1-(d x+c)^2}}{2 d}$$

$$+\frac{b e (d x+c) (a+b \arcsin(d x+c))^3 \sqrt{1-(d x+c)^2}}{d}$$

Result(type 3, 411 leaves):

$$\frac{1}{d}\Bigg(\frac{(d x+c)^2 e a^4}{2}+e b^4\Bigg(\frac{((d x+c)^2-1) \arcsin(d x+c)^4}{2}+\arcsin(d x+c)^3 \left((d x+c) \sqrt{1-(d x+c)^2}+\arcsin(d x+c)\right)$$

$$-\frac{3 \left((d x+c)^2-1\right) \arcsin(d x+c)^2}{2}-\frac{3 \arcsin(d x+c) \left((d x+c) \sqrt{1-(d x+c)^2}+\arcsin(d x+c)\right)}{2}+\frac{3 \arcsin(d x+c)^2}{4}+\frac{3 (d x+c)^2}{4}$$

$$-\frac{3 \arcsin(d x+c)^4}{4}\Bigg)+4 e a b^3\Bigg(\frac{\arcsin(d x+c)^3 \left((d x+c)^2-1\right)}{2}+\frac{3 \arcsin(d x+c)^2 \left((d x+c) \sqrt{1-(d x+c)^2}+\arcsin(d x+c)\right)}{4}$$

$$-\frac{3 \left((d x+c)^2-1\right) \arcsin(d x+c)}{4}-\frac{3 (d x+c) \sqrt{1-(d x+c)^2}}{8}-\frac{3 \arcsin(d x+c)}{8}-\frac{\arcsin(d x+c)^3}{2}\Bigg)$$

$$+6ea^2b^2\left(\frac{\left((dx+c)^2-1\right)\arcsin(dx+c)^2}{2}+\frac{\arcsin(dx+c)\left((dx+c)\sqrt{1-(dx+c)^2}+\arcsin(dx+c)\right)}{2}-\frac{\arcsin(dx+c)^2}{4}-\frac{(dx+c)^2}{4}\right)$$
$$+4ea^3b\left(\frac{(dx+c)^2\arcsin(dx+c)}{2}+\frac{(dx+c)\sqrt{1-(dx+c)^2}}{4}-\frac{\arcsin(dx+c)}{4}\right)\Bigg)$$

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

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

Optimal(type 4, 239 leaves, 20 steps):

$$-\frac{3e^3(dx+c)^2}{2b^2d(a+b\arcsin(dx+c))}+\frac{2e^3(dx+c)^4}{b^2d(a+b\arcsin(dx+c))}-\frac{e^3\cos\left(\frac{2a}{b}\right)\mathrm{Si}\left(\frac{2(a+b\arcsin(dx+c))}{b}\right)}{2b^3d}$$
$$+\frac{e^3\cos\left(\frac{4a}{b}\right)\mathrm{Si}\left(\frac{4(a+b\arcsin(dx+c))}{b}\right)}{b^3d}+\frac{e^3\,\mathrm{Ci}\left(\frac{2(a+b\arcsin(dx+c))}{b}\right)\sin\left(\frac{2a}{b}\right)}{2b^3d}-\frac{e^3\,\mathrm{Ci}\left(\frac{4(a+b\arcsin(dx+c))}{b}\right)\sin\left(\frac{4a}{b}\right)}{b^3d}$$
$$-\frac{e^3(dx+c)^3\sqrt{1-(dx+c)^2}}{2bd(a+b\arcsin(dx+c))^2}$$

Result(type 4, 505 leaves):

$$\frac{1}{16d(a+b\arcsin(dx+c))^2b^3}\Bigg(e^3\Bigg(16\,\mathrm{Si}\left(4\arcsin(dx+c)+\frac{4a}{b}\right)\cos\left(\frac{4a}{b}\right)\arcsin(dx+c)^2b^2-16\,\mathrm{Ci}\left(4\arcsin(dx+c)+\frac{4a}{b}\right)\sin\left(\frac{4a}{b}\right)\arcsin(dx$$
$$+c)^2b^2-8\,\mathrm{Si}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)\arcsin(dx+c)^2b^2+8\,\mathrm{Ci}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)\arcsin(dx+c)^2b^2$$
$$+32\,\mathrm{Si}\left(4\arcsin(dx+c)+\frac{4a}{b}\right)\cos\left(\frac{4a}{b}\right)\arcsin(dx+c)ab-32\,\mathrm{Ci}\left(4\arcsin(dx+c)+\frac{4a}{b}\right)\sin\left(\frac{4a}{b}\right)\arcsin(dx+c)ab-16\,\mathrm{Si}\left(2\arcsin(dx+c)\right.$$
$$\left.+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)\arcsin(dx+c)ab+16\,\mathrm{Ci}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)\arcsin(dx+c)ab+16\,\mathrm{Si}\left(4\arcsin(dx+c)+\frac{4a}{b}\right)\cos\left(\frac{4a}{b}\right)a^2$$
$$+4\cos(4\arcsin(dx+c))\arcsin(dx+c)b^2-16\,\mathrm{Ci}\left(4\arcsin(dx+c)+\frac{4a}{b}\right)\sin\left(\frac{4a}{b}\right)a^2-8\,\mathrm{Si}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)a^2$$
$$+8\,\mathrm{Ci}\left(2\arcsin(dx+c)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)a^2-4\cos(2\arcsin(dx+c))\arcsin(dx+c)b^2+\sin(4\arcsin(dx+c))b^2+4\cos(4\arcsin(dx+c))ab$$
$$-2\sin(2\arcsin(dx+c))b^2-4\cos(2\arcsin(dx+c))ab\Bigg)\Bigg)$$

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

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

Optimal(type 4, 390 leaves, 24 steps):

$$-\frac{2 e^4 (d x+c)^3}{3 b^2 d (a+b \arcsin(d x+c))^2}+\frac{5 e^4 (d x+c)^5}{6 b^2 d (a+b \arcsin(d x+c))^2}+\frac{e^4 \cos\left(\frac{a}{b}\right) \mathrm{Si}\left(\frac{a+b \arcsin(d x+c)}{b}\right)}{48 b^4 d}$$
$$-\frac{27 e^4 \cos\left(\frac{3 a}{b}\right) \mathrm{Si}\left(\frac{3 (a+b \arcsin(d x+c))}{b}\right)}{32 b^4 d}+\frac{125 e^4 \cos\left(\frac{5 a}{b}\right) \mathrm{Si}\left(\frac{5 (a+b \arcsin(d x+c))}{b}\right)}{96 b^4 d}-\frac{e^4 \mathrm{Ci}\left(\frac{a+b \arcsin(d x+c)}{b}\right) \sin\left(\frac{a}{b}\right)}{48 b^4 d}$$
$$+\frac{27 e^4 \mathrm{Ci}\left(\frac{3 (a+b \arcsin(d x+c))}{b}\right) \sin\left(\frac{3 a}{b}\right)}{32 b^4 d}-\frac{125 e^4 \mathrm{Ci}\left(\frac{5 (a+b \arcsin(d x+c))}{b}\right) \sin\left(\frac{5 a}{b}\right)}{96 b^4 d}-\frac{e^4 (d x+c)^4 \sqrt{1-(d x+c)^2}}{3 b d (a+b \arcsin(d x+c))^3}$$
$$-\frac{2 e^4 (d x+c)^2 \sqrt{1-(d x+c)^2}}{b^3 d (a+b \arcsin(d x+c))}+\frac{25 e^4 (d x+c)^4 \sqrt{1-(d x+c)^2}}{6 b^3 d (a+b \arcsin(d x+c))}$$

Result(type 4, 1137 leaves):

$$-\frac{1}{96 d (a+b \arcsin(d x+c))^3 b^4} \Bigg(e^4 \Bigg(243 \cos\left(\frac{3 a}{b}\right) \arcsin(d x+c)^2 \mathrm{Si}\left(3 \arcsin(d x+c)+\frac{3 a}{b}\right) a b^2-243 \sin\left(\frac{3 a}{b}\right) \arcsin(d x+c)^2 \mathrm{Ci}\left(3 \arcsin(d x+c)\right.$$
$$\left.+\frac{3 a}{b}\right) a b^2+243 \cos\left(\frac{3 a}{b}\right) \arcsin(d x+c) \mathrm{Si}\left(3 \arcsin(d x+c)+\frac{3 a}{b}\right) a^2 b-243 \sin\left(\frac{3 a}{b}\right) \arcsin(d x+c) \mathrm{Ci}\left(3 \arcsin(d x+c)+\frac{3 a}{b}\right) a^2 b$$
$$-375 \arcsin(d x+c)^2 \mathrm{Si}\left(5 \arcsin(d x+c)+\frac{5 a}{b}\right) \cos\left(\frac{5 a}{b}\right) a b^2+375 \arcsin(d x+c)^2 \mathrm{Ci}\left(5 \arcsin(d x+c)+\frac{5 a}{b}\right) \sin\left(\frac{5 a}{b}\right) a b^2-375 \arcsin(d x$$
$$+c) \mathrm{Si}\left(5 \arcsin(d x+c)+\frac{5 a}{b}\right) \cos\left(\frac{5 a}{b}\right) a^2 b+375 \arcsin(d x+c) \mathrm{Ci}\left(5 \arcsin(d x+c)+\frac{5 a}{b}\right) \sin\left(\frac{5 a}{b}\right) a^2 b+6 \sin\left(\frac{a}{b}\right) \arcsin(d x$$
$$+c)^2 \mathrm{Ci}\left(\arcsin(d x+c)+\frac{a}{b}\right) a b^2-6 \arcsin(d x+c)^2 \mathrm{Si}\left(\arcsin(d x+c)+\frac{a}{b}\right) \cos\left(\frac{a}{b}\right) a b^2+6 \sin\left(\frac{a}{b}\right) \arcsin(d x+c) \mathrm{Ci}\left(\arcsin(d x+c)\right.$$
$$\left.+\frac{a}{b}\right) a^2 b-6 \arcsin(d x+c) \mathrm{Si}\left(\arcsin(d x+c)+\frac{a}{b}\right) \cos\left(\frac{a}{b}\right) a^2 b-2 \sqrt{1-(d x+c)^2} a^2 b-4 \sqrt{1-(d x+c)^2} \arcsin(d x+c) a b^2$$
$$+81 \cos\left(\frac{3 a}{b}\right) \arcsin(d x+c)^3 \mathrm{Si}\left(3 \arcsin(d x+c)+\frac{3 a}{b}\right) b^3-81 \sin\left(\frac{3 a}{b}\right) \arcsin(d x+c)^3 \mathrm{Ci}\left(3 \arcsin(d x+c)+\frac{3 a}{b}\right) b^3+54 \cos(3 \arcsin(d x$$
$$+c)) \arcsin(d x+c) a b^2-125 \arcsin(d x+c)^3 \mathrm{Si}\left(5 \arcsin(d x+c)+\frac{5 a}{b}\right) \cos\left(\frac{5 a}{b}\right) b^3+125 \arcsin(d x+c)^3 \mathrm{Ci}\left(5 \arcsin(d x+c)\right.$$
$$\left.+\frac{5 a}{b}\right) \sin\left(\frac{5 a}{b}\right) b^3-50 \arcsin(d x+c) \cos(5 \arcsin(d x+c)) a b^2+2 \sin\left(\frac{a}{b}\right) \arcsin(d x+c)^3 \mathrm{Ci}\left(\arcsin(d x+c)+\frac{a}{b}\right) b^3-2 \arcsin(d x$$
$$+c)^3 \mathrm{Si}\left(\arcsin(d x+c)+\frac{a}{b}\right) \cos\left(\frac{a}{b}\right) b^3-81 \sin\left(\frac{3 a}{b}\right) \mathrm{Ci}\left(3 \arcsin(d x+c)+\frac{3 a}{b}\right) a^3+9 \sin(3 \arcsin(d x+c)) \arcsin(d x+c) b^3$$
$$+27 \cos(3 \arcsin(d x+c)) a^2 b-5 \sin(5 \arcsin(d x+c)) a b^2-25 \cos(5 \arcsin(d x+c)) a^2 b+2 \sin\left(\frac{a}{b}\right) \mathrm{Ci}\left(\arcsin(d x+c)+\frac{a}{b}\right) a^3-2 \arcsin(d x$$
$$+c) (d x+c) b^3-2 \mathrm{Si}\left(\arcsin(d x+c)+\frac{a}{b}\right) \cos\left(\frac{a}{b}\right) a^3-2 \sqrt{1-(d x+c)^2} \arcsin(d x+c)^2 b^3-2 (d x+c) a b^2+27 \cos(3 \arcsin(d x$$
$$+c)) \arcsin(d x+c)^2 b^3+81 \cos\left(\frac{3 a}{b}\right) \mathrm{Si}\left(3 \arcsin(d x+c)+\frac{3 a}{b}\right) a^3+9 \sin(3 \arcsin(d x+c)) a b^2-25 \arcsin(d x+c)^2 \cos(5 \arcsin(d x+c)) b^3$$

$$- 5\sin(5\arcsin(dx+c))\arcsin(dx+c)\,b^3 - 125\,\mathrm{Si}\left(5\arcsin(dx+c)+\frac{5a}{b}\right)\cos\left(\frac{5a}{b}\right)a^3 + 125\,\mathrm{Ci}\left(5\arcsin(dx+c)+\frac{5a}{b}\right)\sin\left(\frac{5a}{b}\right)a^3 + 4\sqrt{1-(dx+c)^2}\,b^3 - 6\cos(3\arcsin(dx+c))\,b^3 + 2\cos(5\arcsin(dx+c))\,b^3\Bigg)\Bigg)$$

Problem 65: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{(a+b\arcsin(dx+c))^5}\,dx$$

Optimal(type 4, 178 leaves, 9 steps):

$$\frac{dx+c}{12b^2d(a+b\arcsin(dx+c))^3} + \frac{-dx-c}{24b^4d(a+b\arcsin(dx+c))} + \frac{\mathrm{Ci}\left(\frac{a+b\arcsin(dx+c)}{b}\right)\cos\left(\frac{a}{b}\right)}{24b^5d} + \frac{\mathrm{Si}\left(\frac{a+b\arcsin(dx+c)}{b}\right)\sin\left(\frac{a}{b}\right)}{24b^5d} - \frac{\sqrt{1-(dx+c)^2}}{4bd(a+b\arcsin(dx+c))^4} + \frac{\sqrt{1-(dx+c)^2}}{24b^3d(a+b\arcsin(dx+c))^2}$$

Result(type 4, 386 leaves):

$$\frac{1}{d}\Bigg(-\frac{\sqrt{1-(dx+c)^2}}{4(a+b\arcsin(dx+c))^4b} + \frac{1}{24(a+b\arcsin(dx+c))^3b^5}\Bigg(\sin\left(\frac{a}{b}\right)\arcsin(dx+c)^3\,\mathrm{Si}\left(\arcsin(dx+c)+\frac{a}{b}\right)b^3 + \arcsin(dx+c)^3\,\mathrm{Ci}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)b^3 + 3\sin\left(\frac{a}{b}\right)\arcsin(dx+c)^2\,\mathrm{Si}\left(\arcsin(dx+c)+\frac{a}{b}\right)ab^2 + 3\arcsin(dx+c)^2\,\mathrm{Ci}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)ab^2 + 3\sin\left(\frac{a}{b}\right)\arcsin(dx+c)\,\mathrm{Si}\left(\arcsin(dx+c)+\frac{a}{b}\right)a^2b - \arcsin(dx+c)^2(dx+c)\,b^3 + 3\arcsin(dx+c)\,\mathrm{Ci}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)a^2b + \sin\left(\frac{a}{b}\right)\mathrm{Si}\left(\arcsin(dx+c)+\frac{a}{b}\right)a^3 + \sqrt{1-(dx+c)^2}\arcsin(dx+c)\,b^3 - 2\arcsin(dx+c)(dx+c)\,ab^2 + \mathrm{Ci}\left(\arcsin(dx+c)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)a^3 + \sqrt{1-(dx+c)^2}\,ab^2 - (dx+c)\,a^2b + 2(dx+c)\,b^3\Bigg)\Bigg)$$

Problem 69: Result more than twice size of optimal antiderivative.

$$\int (dex+ce)^3(a+b\arcsin(dx+c))^{5/2}\,dx$$

Optimal(type 4, 391 leaves, 29 steps):

$$-\frac{3e^3(a+b\arcsin(dx+c))^{5/2}}{32d} + \frac{e^3(dx+c)^4(a+b\arcsin(dx+c))^{5/2}}{4d} + \frac{15b^{5/2}e^3\cos\left(\frac{4a}{b}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{b}}\right)\sqrt{2}\sqrt{\pi}}{8192d} + \frac{15b^{5/2}e^3\,\mathrm{FresnelS}\left(\frac{2\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{b}}\right)\sin\left(\frac{4a}{b}\right)\sqrt{2}\sqrt{\pi}}{8192d} - \frac{15b^{5/2}e^3\cos\left(\frac{2a}{b}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{a+b\arcsin(dx+c)}}{\sqrt{b}\sqrt{\pi}}\right)\sqrt{\pi}}{256d}$$

$$- \frac{15 b^{5/2} e^3 \operatorname{FresnelS}\left(\frac{2\sqrt{a+b\arcsin(dx+c)}}{\sqrt{b}\sqrt{\pi}}\right) \sin\left(\frac{2a}{b}\right)\sqrt{\pi}}{256 d} + \frac{15 b e^3 (dx+c)(a+b\arcsin(dx+c))^{3/2}\sqrt{1-(dx+c)^2}}{64 d}$$

$$+ \frac{5 b e^3 (dx+c)^3 (a+b\arcsin(dx+c))^{3/2}\sqrt{1-(dx+c)^2}}{32 d} + \frac{225 b^2 e^3 \sqrt{a+b\arcsin(dx+c)}}{2048 d} - \frac{45 b^2 e^3 (dx+c)^2 \sqrt{a+b\arcsin(dx+c)}}{256 d}$$

$$- \frac{15 b^2 e^3 (dx+c)^4 \sqrt{a+b\arcsin(dx+c)}}{256 d}$$

```
Result(type 4, 798 leaves):
```

$$- \frac{1}{8192 d\sqrt{\pi}} \Bigg(e^3 b \Bigg(1024 \sqrt{\frac{1}{b}} \sqrt{a+b\arcsin(dx+c)} \cos\left(\frac{2(a+b\arcsin(dx+c))}{b} - \frac{2a}{b}\right)\sqrt{\pi}\arcsin(dx+c)^2 b^2$$

$$- 256 \sqrt{\frac{1}{b}} \sqrt{a+b\arcsin(dx+c)}\sqrt{\pi} \cos\left(\frac{4(a+b\arcsin(dx+c))}{b} - \frac{4a}{b}\right)\arcsin(dx+c)^2 b^2$$

$$+ 2048 \sqrt{\frac{1}{b}} \sqrt{a+b\arcsin(dx+c)} \cos\left(\frac{2(a+b\arcsin(dx+c))}{b} - \frac{2a}{b}\right)\sqrt{\pi}\arcsin(dx+c)\, a\, b$$

$$- 1280 \sqrt{\frac{1}{b}} \sqrt{a+b\arcsin(dx+c)}\sqrt{\pi} \sin\left(\frac{2(a+b\arcsin(dx+c))}{b} - \frac{2a}{b}\right)\arcsin(dx+c)\, b^2$$

$$- 512 \sqrt{\frac{1}{b}} \sqrt{a+b\arcsin(dx+c)}\sqrt{\pi} \cos\left(\frac{4(a+b\arcsin(dx+c))}{b} - \frac{4a}{b}\right)\arcsin(dx+c)\, a\, b$$

$$+ 160 \sqrt{\frac{1}{b}} \sqrt{a+b\arcsin(dx+c)}\sqrt{\pi} \sin\left(\frac{4(a+b\arcsin(dx+c))}{b} - \frac{4a}{b}\right)\arcsin(dx+c)\, b^2$$

$$- 15\pi b^2\sqrt{2}\cos\left(\frac{4a}{b}\right)\operatorname{FresnelC}\left(\frac{2\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{\frac{1}{b}}\, b}\right) - 15\pi b^2\sqrt{2}\sin\left(\frac{4a}{b}\right)\operatorname{FresnelS}\left(\frac{2\sqrt{2}\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{\frac{1}{b}}\, b}\right)$$

$$+ 1024 \sqrt{\frac{1}{b}} \sqrt{a+b\arcsin(dx+c)} \cos\left(\frac{2(a+b\arcsin(dx+c))}{b} - \frac{2a}{b}\right)\sqrt{\pi}\, a^2 - 960 \sqrt{\frac{1}{b}} \sqrt{a+b\arcsin(dx+c)} \cos\left(\frac{2(a+b\arcsin(dx+c))}{b}\right.$$

$$-\frac{2a}{b}\Big)\sqrt{\pi}\,b^2 - 1280\sqrt{\frac{1}{b}}\sqrt{a+b\arcsin(dx+c)}\sqrt{\pi}\sin\left(\frac{2(a+b\arcsin(dx+c))}{b}-\frac{2a}{b}\right)ab$$

$$-256\sqrt{\frac{1}{b}}\sqrt{a+b\arcsin(dx+c)}\sqrt{\pi}\cos\left(\frac{4(a+b\arcsin(dx+c))}{b}-\frac{4a}{b}\right)a^2$$

$$+60\sqrt{\frac{1}{b}}\sqrt{a+b\arcsin(dx+c)}\sqrt{\pi}\cos\left(\frac{4(a+b\arcsin(dx+c))}{b}-\frac{4a}{b}\right)b^2+160\sqrt{\frac{1}{b}}\sqrt{a+b\arcsin(dx+c)}\sqrt{\pi}\sin\Big(\frac{4(a+b\arcsin(dx+c))}{b}$$

$$-\frac{4a}{b}\Big)ab+480\pi b^2\cos\left(\frac{2a}{b}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{\frac{1}{b}}\,b}\right)+480\pi b^2\sin\left(\frac{2a}{b}\right)\mathrm{FresnelS}\left(\frac{2\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{\frac{1}{b}}\,b}\right)\Bigg)\sqrt{\frac{1}{b}}\Bigg)$$

```
Problem 74: Result more than twice size of optimal antiderivative.
```

$$\int\frac{dex+ce}{(a+b\arcsin(dx+c))^{7/2}}\,dx$$

```
Optimal(type 4, 208 leaves, 11 steps):
```

$$-\frac{4e}{15b^2d(a+b\arcsin(dx+c))^{3/2}}+\frac{8e(dx+c)^2}{15b^2d(a+b\arcsin(dx+c))^{3/2}}-\frac{32e\cos\left(\frac{2a}{b}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{a+b\arcsin(dx+c)}}{\sqrt{b}\sqrt{\pi}}\right)\sqrt{\pi}}{15b^{7/2}d}$$

$$-\frac{32e\,\mathrm{FresnelS}\left(\frac{2\sqrt{a+b\arcsin(dx+c)}}{\sqrt{b}\sqrt{\pi}}\right)\sin\left(\frac{2a}{b}\right)\sqrt{\pi}}{15b^{7/2}d}-\frac{2e(dx+c)\sqrt{1-(dx+c)^2}}{5bd(a+b\arcsin(dx+c))^{5/2}}+\frac{32e(dx+c)\sqrt{1-(dx+c)^2}}{15b^3d\sqrt{a+b\arcsin(dx+c)}}$$

```
Result(type 4, 582 leaves):
```

$$-\frac{1}{15db^3(a+b\arcsin(dx+c))^{5/2}}\Bigg(e\Bigg(32\sqrt{a+b\arcsin(dx+c)}\sqrt{\frac{1}{b}}\cos\left(\frac{2a}{b}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{\frac{1}{b}}\,b}\right)\sqrt{\pi}\arcsin(dx+c)^2b^2$$

$$+32\sqrt{a+b\arcsin(dx+c)}\sqrt{\frac{1}{b}}\sin\left(\frac{2a}{b}\right)\mathrm{FresnelS}\left(\frac{2\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{\frac{1}{b}}\,b}\right)\sqrt{\pi}\arcsin(dx+c)^2b^2$$

$$+64\sqrt{a+b\arcsin(dx+c)}\sqrt{\frac{1}{b}}\cos\left(\frac{2a}{b}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{a+b\arcsin(dx+c)}}{\sqrt{\pi}\sqrt{\frac{1}{b}}\,b}\right)\sqrt{\pi}\arcsin(dx+c)\,ab$$

$$+ 64 \sqrt{a + b \arcsin(d x + c)}\, \sqrt{\frac{1}{b}}\, \sin\left(\frac{2 a}{b}\right) \operatorname{FresnelS}\left(\frac{2 \sqrt{a + b \arcsin(d x + c)}}{\sqrt{\pi}\, \sqrt{\frac{1}{b}}\, b}\right) \sqrt{\pi} \arcsin(d x + c)\, a b$$

$$+ 32 \sqrt{a + b \arcsin(d x + c)}\, \sqrt{\frac{1}{b}}\, \cos\left(\frac{2 a}{b}\right) \operatorname{FresnelC}\left(\frac{2 \sqrt{a + b \arcsin(d x + c)}}{\sqrt{\pi}\, \sqrt{\frac{1}{b}}\, b}\right) \sqrt{\pi}\, a^2$$

$$+ 32 \sqrt{a + b \arcsin(d x + c)}\, \sqrt{\frac{1}{b}}\, \sin\left(\frac{2 a}{b}\right) \operatorname{FresnelS}\left(\frac{2 \sqrt{a + b \arcsin(d x + c)}}{\sqrt{\pi}\, \sqrt{\frac{1}{b}}\, b}\right) \sqrt{\pi}\, a^2 - 16 \sin\left(\frac{2 (a + b \arcsin(d x + c))}{b} - \frac{2 a}{b}\right) \arcsin(d x$$

$$+ c)^2 b^2 + 4 \cos\left(\frac{2 (a + b \arcsin(d x + c))}{b} - \frac{2 a}{b}\right) \arcsin(d x + c)\, b^2 - 32 \sin\left(\frac{2 (a + b \arcsin(d x + c))}{b} - \frac{2 a}{b}\right) \arcsin(d x + c)\, a b$$

$$+ 4 \cos\left(\frac{2 (a + b \arcsin(d x + c))}{b} - \frac{2 a}{b}\right) a b - 16 \sin\left(\frac{2 (a + b \arcsin(d x + c))}{b} - \frac{2 a}{b}\right) a^2 + 3 \sin\left(\frac{2 (a + b \arcsin(d x + c))}{b} - \frac{2 a}{b}\right) b^2 \Bigg) \Bigg)$$

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

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

```
Optimal(type 4, 81 leaves, 5 steps):
```

$$\frac{2 (e (d x + c))^{3/2} (a + b \arcsin(d x + c))}{3 d e} - \frac{4 b \operatorname{EllipticF}\left(\frac{\sqrt{e (d x + c)}}{\sqrt{e}}, I\right) \sqrt{e}}{9 d} + \frac{4 b \sqrt{e (d x + c)}\, \sqrt{1 - (d x + c)^2}}{9 d}$$

```
Result(type 4, 171 leaves):
```

$$\frac{1}{d e} \left(2 \left(\frac{a (d e x + c e)^{3/2}}{3} + b \left(\frac{(d e x + c e)^{3/2} \arcsin\left(\frac{d e x + c e}{e}\right)}{3} - \frac{2 \left(-\frac{e^2 \sqrt{d e x + c e}\, \sqrt{-\frac{(d e x + c e)^2}{e^2} + 1}}{3} + \frac{e^2 \sqrt{1 - \frac{d e x + c e}{e}}\, \sqrt{\frac{d e x + c e}{e} + 1}\, \operatorname{EllipticF}\left(\sqrt{d e x + c e}\, \sqrt{\frac{1}{e}}, I\right)}{3 \sqrt{\frac{1}{e}}\, \sqrt{-\frac{(d e x + c e)^2}{e^2} + 1}} \right)}{3 e} \right) \right) \right)$$

Problem 79: Unable to integrate problem.

$$\int \frac{(a+b\arcsin(dx+c))^2}{\sqrt{dex+ce}}\,dx$$

Optimal(type 5, 106 leaves, 3 steps):

$$-\frac{8b\,(e\,(dx+c))^{3/2}\,(a+b\arcsin(dx+c))\ \mathrm{hypergeom}\left(\left[\frac{1}{2},\frac{3}{4}\right],\left[\frac{7}{4}\right],(dx+c)^2\right)}{3\,d\,e^2}$$
$$+\frac{16\,b^2\,(e\,(dx+c))^{5/2}\,\mathit{HypergeometricPFQ}\left(\left[1,\frac{5}{4},\frac{5}{4}\right],\left[\frac{7}{4},\frac{9}{4}\right],(dx+c)^2\right)}{15\,d\,e^3}+\frac{2\,(a+b\arcsin(dx+c))^2\sqrt{e\,(dx+c)}}{d\,e}$$

Result(type 8, 25 leaves):

$$\int \frac{(a+b\arcsin(dx+c))^2}{\sqrt{dex+ce}}\,dx$$

Problem 80: Unable to integrate problem.

$$\int \frac{(a+b\arcsin(dx+c))^2}{(dex+ce)^{9/2}}\,dx$$

Optimal(type 5, 106 leaves, 3 steps):

$$-\frac{2\,(a+b\arcsin(dx+c))^2}{7\,d\,e\,(e\,(dx+c))^{7/2}}-\frac{8\,b\,(a+b\arcsin(dx+c))\ \mathrm{hypergeom}\left(\left[-\frac{5}{4},\frac{1}{2}\right],\left[-\frac{1}{4}\right],(dx+c)^2\right)}{35\,d\,e^2\,(e\,(dx+c))^{5/2}}$$
$$-\frac{16\,b^2\,\mathit{HypergeometricPFQ}\left(\left[-\frac{3}{4},-\frac{3}{4},1\right],\left[-\frac{1}{4},\frac{1}{4}\right],(dx+c)^2\right)}{105\,d\,e^3\,(e\,(dx+c))^{3/2}}$$

Result(type 8, 25 leaves):

$$\int \frac{(a+b\arcsin(dx+c))^2}{(dex+ce)^{9/2}}\,dx$$

Problem 89: Result more than twice size of optimal antiderivative.

$$\int \frac{\arcsin(bx+a)}{\left(-b^2x^2-2abx-a^2+1\right)^{3/2}}\,dx$$

Optimal(type 3, 46 leaves, 3 steps):

$$\frac{\ln\left(1-(bx+a)^2\right)}{2\,b}+\frac{(bx+a)\arcsin(bx+a)}{b\sqrt{1-(bx+a)^2}}$$

Result(type 3, 154 leaves):

$$-\frac{1}{2\,b\,(b^2x^2+2\,a\,b\,x+a^2-1)}\Big(-\ln(1-(b\,x+a)^2)\,x^2\,b^2+2\sqrt{-b^2x^2-2\,a\,b\,x-a^2+1}\,\arcsin(b\,x+a)\,x\,b-2\ln(1-(b\,x+a)^2)\,x\,a\,b$$
$$+2\sqrt{-b^2x^2-2\,a\,b\,x-a^2+1}\,\arcsin(b\,x+a)\,a-\ln(1-(b\,x+a)^2)\,a^2+\ln(1-(b\,x+a)^2)\Big)$$

Problem 93: Unable to integrate problem.

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

Optimal(type 4, 81 leaves, 7 steps):

$$-\frac{I\,b\arcsin(c\,x^2)^2}{4}+\frac{b\arcsin(c\,x^2)\ln\left(1-\left(I\,c\,x^2+\sqrt{-c^2x^4+1}\right)^2\right)}{2}+a\ln(x)-\frac{I\,b\,\mathrm{polylog}\left(2,\left(I\,c\,x^2+\sqrt{-c^2x^4+1}\right)^2\right)}{4}$$

Result(type 8, 16 leaves):

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

Problem 102: Unable to integrate problem.

$$\int x^2\,(a+b\arcsin(c\,x^n))\,dx$$

Optimal(type 5, 60 leaves, 3 steps):

$$\frac{x^3\,(a+b\arcsin(c\,x^n))}{3}-\frac{b\,c\,n\,x^{3+n}\,\mathrm{hypergeom}\left(\left[\frac{1}{2},\frac{3+n}{2\,n}\right],\left[\frac{3\,(1+n)}{2\,n}\right],c^2x^{2\,n}\right)}{3\,(3+n)}$$

Result(type 8, 16 leaves):

$$\int x^2\,(a+b\arcsin(c\,x^n))\,dx$$

Problem 103: Unable to integrate problem.

$$\int(a+b\arcsin(c\,x^n))\,dx$$

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

$$a\,x+b\,x\arcsin(c\,x^n)-\frac{b\,c\,n\,x^{1+n}\,\mathrm{hypergeom}\left(\left[\frac{1}{2},\frac{1+n}{2\,n}\right],\left[\frac{3}{2}+\frac{1}{2\,n}\right],c^2x^{2\,n}\right)}{1+n}$$

Result(type 8, 12 leaves):

$$\int(a+b\arcsin(c\,x^n))\,dx$$

Problem 108: Unable to integrate problem.

$$\int \left(a + b \arcsin\left(d x^2 + 1\right)\right)^2 \, dx$$

Optimal(type 3, 61 leaves, 2 steps):

$$-8 b^2 x + x \left(a + b \arcsin\left(d x^2 + 1\right)\right)^2 + \frac{4 b \left(a + b \arcsin\left(d x^2 + 1\right)\right) \sqrt{-d^2 x^4 - 2 d x^2}}{d x}$$

Result(type 8, 16 leaves):

$$\int \left(a + b \arcsin\left(d x^2 + 1\right)\right)^2 \, dx$$

Problem 109: Unable to integrate problem.

$$\int \frac{1}{\left(a + b \arcsin\left(d x^2 + 1\right)\right)^3} \, dx$$

Optimal(type 4, 197 leaves, 2 steps):

$$\frac{x}{8 b^2 \left(a + b \arcsin\left(d x^2 + 1\right)\right)} + \frac{x \operatorname{Ci}\left(\frac{a + b \arcsin\left(d x^2 + 1\right)}{2 b}\right) \left(\cos\left(\frac{a}{2 b}\right) - \sin\left(\frac{a}{2 b}\right)\right)}{16 b^3 \left(\cos\left(\frac{\arcsin\left(d x^2 + 1\right)}{2}\right) - \sin\left(\frac{\arcsin\left(d x^2 + 1\right)}{2}\right)\right)} + \frac{x \operatorname{Si}\left(\frac{a + b \arcsin\left(d x^2 + 1\right)}{2 b}\right) \left(\cos\left(\frac{a}{2 b}\right) + \sin\left(\frac{a}{2 b}\right)\right)}{16 b^3 \left(\cos\left(\frac{\arcsin\left(d x^2 + 1\right)}{2}\right) - \sin\left(\frac{\arcsin\left(d x^2 + 1\right)}{2}\right)\right)}$$
$$- \frac{\sqrt{-d^2 x^4 - 2 d x^2}}{4 b d x \left(a + b \arcsin\left(d x^2 + 1\right)\right)^2}$$

Result(type 8, 16 leaves):

$$\int \frac{1}{\left(a + b \arcsin\left(d x^2 + 1\right)\right)^3} \, dx$$

Problem 110: Unable to integrate problem.

$$\int \arcsin\left(x^2 + 1\right)^2 \, dx$$

Optimal(type 3, 38 leaves, 2 steps):

$$-8 x + x \arcsin\left(x^2 + 1\right)^2 + \frac{4 \arcsin\left(x^2 + 1\right) \sqrt{-x^4 - 2 x^2}}{x}$$

Result(type 8, 10 leaves):

$$\int \arcsin\left(x^2 + 1\right)^2 \, dx$$

Problem 111: Unable to integrate problem.

$$\int \left(a + b \arcsin\left(d x^2 + 1\right)\right)^{5/2} \, dx$$

Optimal(type 4, 233 leaves, 2 steps):

$$x\left(a+b\arcsin(d x^2+1)\right)^{5/2}-\frac{15 x\,\mathrm{FresnelS}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\arcsin(d x^2+1)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2 b}\right)-\sin\left(\frac{a}{2 b}\right)\right)\sqrt{\pi}}{\left(\frac{1}{b}\right)^{5/2}\left(\cos\left(\frac{\arcsin(d x^2+1)}{2}\right)-\sin\left(\frac{\arcsin(d x^2+1)}{2}\right)\right)}$$

$$+\frac{15 x\,\mathrm{FresnelC}\left(\frac{\sqrt{\frac{1}{b}}\sqrt{a+b\arcsin(d x^2+1)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2 b}\right)+\sin\left(\frac{a}{2 b}\right)\right)\sqrt{\pi}}{\left(\frac{1}{b}\right)^{5/2}\left(\cos\left(\frac{\arcsin(d x^2+1)}{2}\right)-\sin\left(\frac{\arcsin(d x^2+1)}{2}\right)\right)}+\frac{5 b\left(a+b\arcsin(d x^2+1)\right)^{3/2}\sqrt{-d^2 x^4-2 d x^2}}{d x}$$

$$-15 b^2 x\sqrt{a+b\arcsin(d x^2+1)}$$

Result(type 8, 16 leaves):

$$\int\left(a+b\arcsin(d x^2+1)\right)^{5/2}\,\mathrm{d}x$$

Problem 112: Unable to integrate problem.

$$\int\frac{1}{\left(a+b\arcsin(d x^2+1)\right)^{5/2}}\,\mathrm{d}x$$

Optimal(type 4, 211 leaves, 2 steps):

$$\frac{x\,\mathrm{FresnelC}\left(\frac{\sqrt{a+b\arcsin(d x^2+1)}}{\sqrt{b}\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2 b}\right)-\sin\left(\frac{a}{2 b}\right)\right)\sqrt{\pi}}{3 b^{5/2}\left(\cos\left(\frac{\arcsin(d x^2+1)}{2}\right)-\sin\left(\frac{\arcsin(d x^2+1)}{2}\right)\right)}+\frac{x\,\mathrm{FresnelS}\left(\frac{\sqrt{a+b\arcsin(d x^2+1)}}{\sqrt{b}\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2 b}\right)+\sin\left(\frac{a}{2 b}\right)\right)\sqrt{\pi}}{3 b^{5/2}\left(\cos\left(\frac{\arcsin(d x^2+1)}{2}\right)-\sin\left(\frac{\arcsin(d x^2+1)}{2}\right)\right)}$$

$$-\frac{\sqrt{-d^2 x^4-2 d x^2}}{3 b d x\left(a+b\arcsin(d x^2+1)\right)^{3/2}}+\frac{x}{3 b^2\sqrt{a+b\arcsin(d x^2+1)}}$$

Result(type 8, 16 leaves):

$$\int\frac{1}{\left(a+b\arcsin(d x^2+1)\right)^{5/2}}\,\mathrm{d}x$$

Problem 113: Unable to integrate problem.

$$\int\left(a+b\arcsin(d x^2-1)\right)^{3/2}\,\mathrm{d}x$$

Optimal(type 4, 209 leaves, 2 steps):

$$x\left(a+b\arcsin(d x^2-1)\right)^{3/2}+\frac{3(-b)^{3/2}x\,\text{FresnelS}\left(\frac{\sqrt{a+b\arcsin(d x^2-1)}}{\sqrt{-b}\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\sqrt{\pi}}{\cos\left(\frac{\arcsin(d x^2-1)}{2}\right)+\sin\left(\frac{\arcsin(d x^2-1)}{2}\right)}$$
$$+\frac{3(-b)^{3/2}x\,\text{FresnelC}\left(\frac{\sqrt{a+b\arcsin(d x^2-1)}}{\sqrt{-b}\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)\sqrt{\pi}}{\cos\left(\frac{\arcsin(d x^2-1)}{2}\right)+\sin\left(\frac{\arcsin(d x^2-1)}{2}\right)}+\frac{3b\sqrt{-d^2x^4+2d x^2}\sqrt{a+b\arcsin(d x^2-1)}}{d x}$$

```
Result(type 8, 16 leaves):
```

$$\int\left(a+b\arcsin(d x^2-1)\right)^{3/2}\,\mathrm{d}x$$

```
Problem 114: Unable to integrate problem.
```

$$\int\frac{1}{\left(a+b\arcsin(d x^2-1)\right)^{7/2}}\,\mathrm{d}x$$

```
Optimal(type 4, 265 leaves, 2 steps):
```

$$\frac{x}{15b^2\left(a+b\arcsin(d x^2-1)\right)^{3/2}}+\frac{\left(-\frac{1}{b}\right)^{7/2}x\,\text{FresnelC}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a+b\arcsin(d x^2-1)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)-\sin\left(\frac{a}{2b}\right)\right)\sqrt{\pi}}{15\left(\cos\left(\frac{\arcsin(d x^2-1)}{2}\right)+\sin\left(\frac{\arcsin(d x^2-1)}{2}\right)\right)}$$
$$-\frac{\left(-\frac{1}{b}\right)^{7/2}x\,\text{FresnelS}\left(\frac{\sqrt{-\frac{1}{b}}\sqrt{a+b\arcsin(d x^2-1)}}{\sqrt{\pi}}\right)\left(\cos\left(\frac{a}{2b}\right)+\sin\left(\frac{a}{2b}\right)\right)\sqrt{\pi}}{15\left(\cos\left(\frac{\arcsin(d x^2-1)}{2}\right)+\sin\left(\frac{\arcsin(d x^2-1)}{2}\right)\right)}-\frac{\sqrt{-d^2x^4+2d x^2}}{5b d x\left(a+b\arcsin(d x^2-1)\right)^{5/2}}$$
$$+\frac{\sqrt{-d^2x^4+2d x^2}}{15b^3 d x\sqrt{a+b\arcsin(d x^2-1)}}$$

```
Result(type 8, 16 leaves):
```

$$\int\frac{1}{\left(a+b\arcsin(d x^2-1)\right)^{7/2}}\,\mathrm{d}x$$

```
Problem 115: Result more than twice size of optimal antiderivative.
```

$$\int \frac{\left(a+b \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right)\right)^{3}}{-c^{2} x^{2}+1}\, dx$$

```
Optimal(type 4, 300 leaves, 8 steps):
```

$$\frac{I\left(a+b \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right)\right)^{4}}{4 b c}-\frac{\left(a+b \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right)\right)^{3} \ln\left(1-\left(\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}}+\sqrt{1-\frac{-c x+1}{c x+1}}\right)^{2}\right)}{c}$$
$$+\frac{3 I b\left(a+b \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right)\right)^{2} \operatorname{polylog}\left(2,\left(\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}}+\sqrt{1-\frac{-c x+1}{c x+1}}\right)^{2}\right)}{2 c}$$
$$-\frac{3 b^{2}\left(a+b \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right)\right) \operatorname{polylog}\left(3,\left(\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}}+\sqrt{1-\frac{-c x+1}{c x+1}}\right)^{2}\right)}{2 c}-\frac{3 I b^{3} \operatorname{polylog}\left(4,\left(\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}}+\sqrt{1-\frac{-c x+1}{c x+1}}\right)^{2}\right)}{4 c}$$

```
Result(type 4, 1231 leaves):
```

$$-\frac{a^{3} \ln(c x-1)}{2 c}+\frac{a^{3} \ln(c x+1)}{2 c}-\frac{6 I b^{3} \operatorname{polylog}\left(4,\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}}+\sqrt{1-\frac{-c x+1}{c x+1}}\right)}{c}$$
$$-\frac{b^{3} \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right)^{3} \ln\left(1-\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}}-\sqrt{1-\frac{-c x+1}{c x+1}}\right)}{c}+\frac{3 I b^{3} \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right)^{2} \operatorname{polylog}\left(2,-\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}}-\sqrt{1-\frac{-c x+1}{c x+1}}\right)}{c}$$
$$-\frac{6 b^{3} \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right) \operatorname{polylog}\left(3,\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}}+\sqrt{1-\frac{-c x+1}{c x+1}}\right)}{c}$$
$$+\frac{6 I a b^{2} \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right) \operatorname{polylog}\left(2,-\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}}-\sqrt{1-\frac{-c x+1}{c x+1}}\right)}{c}-\frac{b^{3} \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right)^{3} \ln\left(1+\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}}+\sqrt{1-\frac{-c x+1}{c x+1}}\right)}{c}$$
$$+\frac{3 I a^{2} b \operatorname{polylog}\left(2,-\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}}-\sqrt{1-\frac{-c x+1}{c x+1}}\right)}{c}-\frac{6 b^{3} \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right) \operatorname{polylog}\left(3,-\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}}-\sqrt{1-\frac{-c x+1}{c x+1}}\right)}{c}$$
$$+\frac{3 I a^{2} b \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right)^{2}}{2 c}+\frac{3 I a^{2} b \operatorname{polylog}\left(2,\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}}+\sqrt{1-\frac{-c x+1}{c x+1}}\right)}{c}$$

$$- \frac{3 a b^2 \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right)^2 \ln\left(1 - \frac{I\sqrt{-c x+1}}{\sqrt{c x+1}} - \sqrt{1 - \frac{-c x+1}{c x+1}}\right)}{c} + \frac{I a b^2 \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right)^3}{c}$$

$$- \frac{6 a b^2 \operatorname{polylog}\left(3, \frac{I\sqrt{-c x+1}}{\sqrt{c x+1}} + \sqrt{1 - \frac{-c x+1}{c x+1}}\right)}{c} - \frac{3 a b^2 \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right)^2 \ln\left(1 + \frac{I\sqrt{-c x+1}}{\sqrt{c x+1}} + \sqrt{1 - \frac{-c x+1}{c x+1}}\right)}{c}$$

$$+ \frac{3 I b^3 \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right)^2 \operatorname{polylog}\left(2, \frac{I\sqrt{-c x+1}}{\sqrt{c x+1}} + \sqrt{1 - \frac{-c x+1}{c x+1}}\right)}{c} - \frac{6 a b^2 \operatorname{polylog}\left(3, -\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}} - \sqrt{1 - \frac{-c x+1}{c x+1}}\right)}{c}$$

$$+ \frac{I b^3 \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right)^4}{4 c} - \frac{3 a^2 b \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right) \ln\left(1 - \frac{I\sqrt{-c x+1}}{\sqrt{c x+1}} - \sqrt{1 - \frac{-c x+1}{c x+1}}\right)}{c}$$

$$- \frac{6 I b^3 \operatorname{polylog}\left(4, -\frac{I\sqrt{-c x+1}}{\sqrt{c x+1}} - \sqrt{1 - \frac{-c x+1}{c x+1}}\right)}{c} - \frac{3 a^2 b \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right) \ln\left(1 + \frac{I\sqrt{-c x+1}}{\sqrt{c x+1}} + \sqrt{1 - \frac{-c x+1}{c x+1}}\right)}{c}$$

$$+ \frac{6 I a b^2 \arcsin\left(\frac{\sqrt{-c x+1}}{\sqrt{c x+1}}\right) \operatorname{polylog}\left(2, \frac{I\sqrt{-c x+1}}{\sqrt{c x+1}} + \sqrt{1 - \frac{-c x+1}{c x+1}}\right)}{c}$$

Problem 119: Unable to integrate problem.

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

Optimal(type 3, 69 leaves, 6 steps):

$$-\frac{e^{\arcsin(a x)} \cos(2 \arcsin(a x))}{10 a^4} + \frac{e^{\arcsin(a x)} \cos(4 \arcsin(a x))}{34 a^4} + \frac{e^{\arcsin(a x)} \sin(2 \arcsin(a x))}{20 a^4} - \frac{e^{\arcsin(a x)} \sin(4 \arcsin(a x))}{136 a^4}$$

Result(type 8, 11 leaves):

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

Problem 120: Unable to integrate problem.

$$\int \frac{e^{\arcsin(a x)}}{x^2} \, dx$$

Optimal(type 5, 89 leaves, 6 steps):

$$(1 - I)\, a\, e^{(1+I) \arcsin(a x)} \operatorname{hypergeom}\left(\left[1, \frac{1}{2} - \frac{I}{2}\right], \left[\frac{3}{2} - \frac{I}{2}\right], \left(I a x + \sqrt{-a^2 x^2 + 1}\right)^2\right) + (-2 + 2 I)\, a\, e^{(1+I) \arcsin(a x)} \operatorname{hypergeom}\left(\left[2, \frac{1}{2} - \frac{I}{2}\right], \left[\frac{3}{2} - \frac{I}{2}\right],\right.$$

$$\left(I a x+\sqrt{-a^2 x^2+1}\right)^2\Big)$$

Result(type 8, 11 leaves):

$$\int \frac{e^{\arcsin(a x)}}{x^2}\, dx$$

Problem 121: Unable to integrate problem.

$$\int e^{\arcsin(a x)^2} x\, dx$$

Optimal(type 4, 37 leaves, 8 steps):

$$\frac{I E \operatorname{erfi}(-I+\arcsin(a x))\sqrt{\pi}}{8 a^2}-\frac{I E \operatorname{erfi}(I+\arcsin(a x))\sqrt{\pi}}{8 a^2}$$

Result(type 8, 11 leaves):

$$\int e^{\arcsin(a x)^2} x\, dx$$

Problem 122: Unable to integrate problem.

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

Optimal(type 3, 177 leaves, 13 steps):

$$\frac{e^{\arcsin(b x+a)}(b x+a)}{8 b^3}+\frac{a^2 e^{\arcsin(b x+a)}(b x+a)}{2 b^3}+\frac{2 a e^{\arcsin(b x+a)}\cos(2\arcsin(b x+a))}{5 b^3}-\frac{e^{\arcsin(b x+a)}\cos(3\arcsin(b x+a))}{40 b^3}$$
$$-\frac{a e^{\arcsin(b x+a)}\sin(2\arcsin(b x+a))}{5 b^3}-\frac{3 e^{\arcsin(b x+a)}\sin(3\arcsin(b x+a))}{40 b^3}+\frac{e^{\arcsin(b x+a)}\sqrt{1-(b x+a)^2}}{8 b^3}+\frac{a^2 e^{\arcsin(b x+a)}\sqrt{1-(b x+a)^2}}{2 b^3}$$

Result(type 8, 13 leaves):

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

Problem 123: Unable to integrate problem.

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

Optimal(type 3, 87 leaves, 9 steps):

$$-\frac{a e^{\arcsin(b x+a)}(b x+a)}{2 b^2}-\frac{e^{\arcsin(b x+a)}\cos(2\arcsin(b x+a))}{5 b^2}+\frac{e^{\arcsin(b x+a)}\sin(2\arcsin(b x+a))}{10 b^2}-\frac{a e^{\arcsin(b x+a)}\sqrt{1-(b x+a)^2}}{2 b^2}$$

Result(type 8, 11 leaves):

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

Problem 124: Unable to integrate problem.

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

Optimal(type 4, 41 leaves, 7 steps):

$$\frac{e^{\frac{1}{4}}\,\mathrm{erfi}\left(-\frac{I}{2}+\arcsin(b x+a)\right)\sqrt{\pi}}{4 b}+\frac{e^{\frac{1}{4}}\,\mathrm{erfi}\left(\frac{I}{2}+\arcsin(b x+a)\right)\sqrt{\pi}}{4 b}$$

Result(type 8, 11 leaves):

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

Problem 126: Unable to integrate problem.

$$\int e^{\arcsin(a x)}\left(-a^2 x^2+1\right)^{5/2}\,dx$$

Optimal(type 3, 135 leaves, 7 steps):

$$\frac{144\,e^{\arcsin(a x)}}{629 a}+\frac{72\,e^{\arcsin(a x)}\left(-a^2 x^2+1\right)}{629 a}+\frac{120\,e^{\arcsin(a x)}\,x\left(-a^2 x^2+1\right)^{3/2}}{629}+\frac{30\,e^{\arcsin(a x)}\left(-a^2 x^2+1\right)^2}{629 a}+\frac{6\,e^{\arcsin(a x)}\,x\left(-a^2 x^2+1\right)^{5/2}}{37}$$
$$+\frac{e^{\arcsin(a x)}\left(-a^2 x^2+1\right)^3}{37 a}+\frac{144\,e^{\arcsin(a x)}\,x\sqrt{-a^2 x^2+1}}{629}$$

Result(type 8, 20 leaves):

$$\int e^{\arcsin(a x)}\left(-a^2 x^2+1\right)^{5/2}\,dx$$

Problem 127: Unable to integrate problem.

$$\int \frac{e^{\arcsin(a x)}}{\left(-a^2 x^2+1\right)^{3/2}}\,dx$$

Optimal(type 5, 48 leaves, 4 steps):

$$\frac{\left(\frac{4}{5}-\frac{8 I}{5}\right) e^{(1+2 I)\arcsin(a x)}\,\mathrm{hypergeom}\left(\left[2, 1-\frac{I}{2}\right], \left[2-\frac{I}{2}\right], -\left(I a x+\sqrt{-a^2 x^2+1}\right)^2\right)}{a}$$

Result(type 8, 20 leaves):

$$\int \frac{e^{\arcsin(a x)}}{\left(-a^2 x^2+1\right)^{3/2}}\,dx$$

Problem 128: Unable to integrate problem.

$$\int \frac{e^{\arcsin(a x)}}{\left(-a^2 x^2 + 1\right)^{5/2}}\, dx$$

Optimal(type 5, 91 leaves, 5 steps):

$$\frac{e^{\arcsin(a x)} x}{3 \left(-a^2 x^2 + 1\right)^{3/2}} - \frac{e^{\arcsin(a x)}}{6 a \left(-a^2 x^2 + 1\right)} + \frac{\left(\frac{2}{3} - \frac{4 I}{3}\right) e^{(1 + 2 I) \arcsin(a x)} \operatorname{hypergeom}\left(\left[2, 1 - \frac{I}{2}\right], \left[2 - \frac{I}{2}\right], -\left(I a x + \sqrt{-a^2 x^2 + 1}\right)^2\right)}{a}$$

Result(type 8, 20 leaves):

$$\int \frac{e^{\arcsin(a x)}}{\left(-a^2 x^2 + 1\right)^{5/2}}\, dx$$

Problem 129: Unable to integrate problem.

$$\int \frac{\arcsin\left(\sqrt{b x^2 + 1}\right)^n}{\sqrt{b x^2 + 1}}\, dx$$

Optimal(type 3, 34 leaves, 2 steps):

$$\frac{\arcsin\left(\sqrt{b x^2 + 1}\right)^{1 + n} \sqrt{-b x^2}}{b (1 + n) x}$$

Result(type 8, 24 leaves):

$$\int \frac{\arcsin\left(\sqrt{b x^2 + 1}\right)^n}{\sqrt{b x^2 + 1}}\, dx$$

Problem 130: Unable to integrate problem.

$$\int \frac{1}{\arcsin\left(\sqrt{b x^2 + 1}\right) \sqrt{b x^2 + 1}}\, dx$$

Optimal(type 3, 26 leaves, 2 steps):

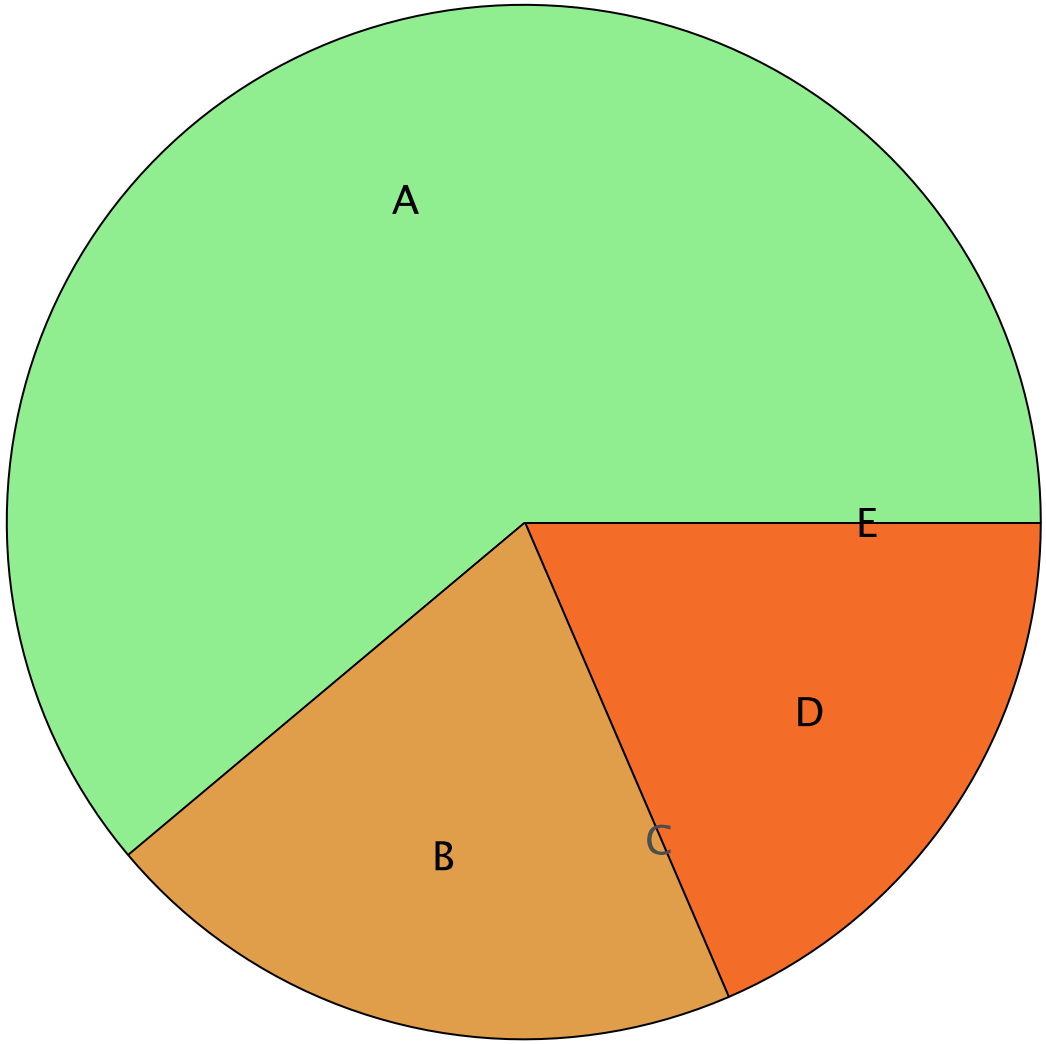
$$\frac{\ln\left(\arcsin\left(\sqrt{b x^2 + 1}\right)\right) \sqrt{-b x^2}}{b x}$$

Result(type 8, 24 leaves):

$$\int \frac{1}{\arcsin\left(\sqrt{b x^2 + 1}\right) \sqrt{b x^2 + 1}}\, dx$$

Summary of Integration Test Results

383 integration problems



A - 234 optimal antiderivatives
B - 78 more than twice size of optimal antiderivatives
C - 0 unnecessarily complex antiderivatives
D - 71 unable to integrate problems
E - 0 integration timeouts