Maple 2018.2 Integration Test Results
on the problems in "6 Hyperbolic functions/6.1 Hyperbolic sine"

Test results for the 136 problems in "6.1.1 (c+d x)^m (a+b sinh)^n.txt"

Problem 1: Result more than twice size of optimal antiderivative.

$$\int (d x + c)^4 \sinh(b x + a) \, dx$$

Optimal(type 3, 91 leaves, 5 steps):

$$\frac{24 d^4 \cosh(b x + a)}{b^5} + \frac{12 d^2 (d x + c)^2 \cosh(b x + a)}{b^3} + \frac{(d x + c)^4 \cosh(b x + a)}{b} - \frac{24 d^3 (d x + c) \sinh(b x + a)}{b^4} - \frac{4 d (d x + c)^3 \sinh(b x + a)}{b^2}$$

Result(type 3, 546 leaves):

$$\frac{1}{b} \Bigg(c^4 \cosh(b x + a) - \frac{12 d^3 a c \left((b x + a)^2 \cosh(b x + a) - 2 (b x + a) \sinh(b x + a) + 2 \cosh(b x + a) \right)}{b^3}$$
$$+ \frac{12 d^3 a^2 c ((b x + a) \cosh(b x + a) - \sinh(b x + a))}{b^3} - \frac{12 d^2 a c^2 ((b x + a) \cosh(b x + a) - \sinh(b x + a))}{b^2}$$
$$+ \frac{d^4 \left((b x + a)^4 \cosh(b x + a) - 4 (b x + a)^3 \sinh(b x + a) + 12 (b x + a)^2 \cosh(b x + a) - 24 (b x + a) \sinh(b x + a) + 24 \cosh(b x + a) \right)}{b^4}$$
$$+ \frac{d^4 a^4 \cosh(b x + a)}{b^4} - \frac{4 d^4 a^3 ((b x + a) \cosh(b x + a) - \sinh(b x + a))}{b^4} + \frac{4 d c^3 ((b x + a) \cosh(b x + a) - \sinh(b x + a))}{b}$$
$$- \frac{4 d^3 a^3 c \cosh(b x + a)}{b^3} + \frac{6 d^2 a^2 c^2 \cosh(b x + a)}{b^2} - \frac{4 d a c^3 \cosh(b x + a)}{b}$$
$$- \frac{4 d^4 a \left((b x + a)^3 \cosh(b x + a) - 3 (b x + a)^2 \sinh(b x + a) + 6 (b x + a) \cosh(b x + a) - 6 \sinh(b x + a) \right)}{b^4}$$
$$+ \frac{4 d^3 c \left((b x + a)^3 \cosh(b x + a) - 3 (b x + a)^2 \sinh(b x + a) + 6 (b x + a) \cosh(b x + a) - 6 \sinh(b x + a) \right)}{b^3}$$
$$+ \frac{6 d^4 a^2 \left((b x + a)^2 \cosh(b x + a) - 2 (b x + a) \sinh(b x + a) + 2 \cosh(b x + a) \right)}{b^4}$$
$$+ \frac{6 d^2 c^2 \left((b x + a)^2 \cosh(b x + a) - 2 (b x + a) \sinh(b x + a) + 2 \cosh(b x + a) \right)}{b^2} \Bigg)$$

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

$$\int (d x + c)^2 \sinh(b x + a) \, dx$$

Optimal(type 3, 49 leaves, 3 steps):

$$\frac{2 d^2 \cosh(b x + a)}{b^3} + \frac{(d x + c)^2 \cosh(b x + a)}{b} - \frac{2 d (d x + c) \sinh(b x + a)}{b^2}$$

Result(type 3, 146 leaves):

$$\frac{1}{b}\left(\frac{d^2\left((bx+a)^2\cosh(bx+a)-2(bx+a)\sinh(bx+a)+2\cosh(bx+a)\right)}{b^2}-\frac{2d^2a\left((bx+a)\cosh(bx+a)-\sinh(bx+a)\right)}{b^2}+\frac{2dc\left((bx+a)\cosh(bx+a)-\sinh(bx+a)\right)}{b}+\frac{d^2a^2\cosh(bx+a)}{b^2}-\frac{2dac\cosh(bx+a)}{b}+c^2\cosh(bx+a)\right)$$

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

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

Optimal(type 4, 96 leaves, 5 steps):

$$-\frac{b\cosh(bx+a)}{2d^2(dx+c)}+\frac{b^2\cosh\left(a-\frac{bc}{d}\right)\operatorname{Shi}\left(\frac{bc}{d}+bx\right)}{2d^3}+\frac{b^2\operatorname{Chi}\left(\frac{bc}{d}+bx\right)\sinh\left(a-\frac{bc}{d}\right)}{2d^3}-\frac{\sinh(bx+a)}{2d(dx+c)^2}$$

Result(type 4, 276 leaves):

$$-\frac{b^3e^{-bx-a}x}{4d\left(b^2d^2x^2+2b^2cdx+c^2b^2\right)}-\frac{b^3e^{-bx-a}c}{4d^2\left(b^2d^2x^2+2b^2cdx+c^2b^2\right)}+\frac{b^2e^{-bx-a}}{4d\left(b^2d^2x^2+2b^2cdx+c^2b^2\right)}+\frac{b^2e^{-\frac{ad-cb}{d}}\operatorname{Ei}_1\left(bx+a-\frac{ad-cb}{d}\right)}{4d^3}-\frac{b^2e^{bx+a}}{4d^3\left(\frac{bc}{d}+bx\right)^2}-\frac{b^2e^{bx+a}}{4d^3\left(\frac{bc}{d}+bx\right)}-\frac{b^2e^{\frac{ad-cb}{d}}\operatorname{Ei}_1\left(-bx-a-\frac{-ad+cb}{d}\right)}{4d^3}$$

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

$$\int (dx+c)^2\sinh(bx+a)^2\,dx$$

Optimal(type 3, 85 leaves, 4 steps):

$$-\frac{d^2x}{4b^2}-\frac{(dx+c)^3}{6d}+\frac{d^2\cosh(bx+a)\sinh(bx+a)}{4b^3}+\frac{(dx+c)^2\cosh(bx+a)\sinh(bx+a)}{2b}-\frac{d(dx+c)\sinh(bx+a)^2}{2b^2}$$

Result(type 3, 261 leaves):

$$\frac{1}{b}\left(\frac{d^2\left(\frac{(bx+a)^2\cosh(bx+a)\sinh(bx+a)}{2}-\frac{(bx+a)^3}{6}-\frac{(bx+a)\cosh(bx+a)^2}{2}+\frac{\cosh(bx+a)\sinh(bx+a)}{4}+\frac{bx}{4}+\frac{a}{4}\right)}{b^2}-\frac{2d^2a\left(\frac{(bx+a)\cosh(bx+a)\sinh(bx+a)}{2}-\frac{(bx+a)^2}{4}-\frac{\cosh(bx+a)^2}{4}\right)}{b^2}\right.$$

$$+\frac{2 d c \left(\frac{(b x+a)\cosh(b x+a)\sinh(b x+a)}{2}-\frac{(b x+a)^2}{4}-\frac{\cosh(b x+a)^2}{4}\right)}{b}+\frac{d^2 a^2\left(\frac{\cosh(b x+a)\sinh(b x+a)}{2}-\frac{b x}{2}-\frac{a}{2}\right)}{b^2}$$

$$-\frac{2 d a c\left(\frac{\cosh(b x+a)\sinh(b x+a)}{2}-\frac{b x}{2}-\frac{a}{2}\right)}{b}+c^2\left(\frac{\cosh(b x+a)\sinh(b x+a)}{2}-\frac{b x}{2}-\frac{a}{2}\right)\Bigg)$$

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Problem 5: Result more than twice size of optimal antiderivative.
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$$\int \frac{\sinh(b x+a)^2}{(d x+c)^4}\, dx$$

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Optimal(type 4, 150 leaves, 7 steps):
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$$-\frac{b^2}{3 d^3 (d x+c)}+\frac{2 b^3 \cosh\left(2 a-\frac{2 b c}{d}\right)\operatorname{Shi}\left(\frac{2 b c}{d}+2 b x\right)}{3 d^4}+\frac{2 b^3 \operatorname{Chi}\left(\frac{2 b c}{d}+2 b x\right)\sinh\left(2 a-\frac{2 b c}{d}\right)}{3 d^4}-\frac{b\cosh(b x+a)\sinh(b x+a)}{3 d^2 (d x+c)^2}$$

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

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Result(type 4, 554 leaves):
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$$\frac{1}{6 d (d x+c)^3}-\frac{b^5 e^{-2 b x-2 a} x^2}{6 d \left(b^3 d^3 x^3+3 b^3 c d^2 x^2+3 b^3 c^2 d x+b^3 c^3\right)}-\frac{b^5 e^{-2 b x-2 a} c x}{3 d^2 \left(b^3 d^3 x^3+3 b^3 c d^2 x^2+3 b^3 c^2 d x+b^3 c^3\right)}$$

$$-\frac{b^5 e^{-2 b x-2 a} c^2}{6 d^3 \left(b^3 d^3 x^3+3 b^3 c d^2 x^2+3 b^3 c^2 d x+b^3 c^3\right)}+\frac{b^4 e^{-2 b x-2 a} x}{12 d \left(b^3 d^3 x^3+3 b^3 c d^2 x^2+3 b^3 c^2 d x+b^3 c^3\right)}$$

$$+\frac{b^4 e^{-2 b x-2 a} c}{12 d^2 \left(b^3 d^3 x^3+3 b^3 c d^2 x^2+3 b^3 c^2 d x+b^3 c^3\right)}-\frac{b^3 e^{-2 b x-2 a}}{12 d \left(b^3 d^3 x^3+3 b^3 c d^2 x^2+3 b^3 c^2 d x+b^3 c^3\right)}$$

$$+\frac{b^3 e^{-\frac{2 (a d-c b)}{d}} \operatorname{Ei}_1\left(2 b x+2 a-\frac{2 (a d-c b)}{d}\right)}{3 d^4}-\frac{b^3 e^{2 b x+2 a}}{12 d^4\left(\frac{b c}{d}+b x\right)^3}-\frac{b^3 e^{2 b x+2 a}}{12 d^4\left(\frac{b c}{d}+b x\right)^2}-\frac{b^3 e^{2 b x+2 a}}{6 d^4\left(\frac{b c}{d}+b x\right)}$$

$$-\frac{b^3 e^{\frac{2 (a d-c b)}{d}} \operatorname{Ei}_1\left(-2 b x-2 a-\frac{2 (-a d+c b)}{d}\right)}{3 d^4}$$

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Problem 6: Result more than twice size of optimal antiderivative.
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$$\int (d x+c)^4 \sinh(b x+a)^3\, dx$$

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Optimal(type 3, 205 leaves, 12 steps):
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$$-\frac{488 d^4 \cosh(bx+a)}{27 b^5} - \frac{80 d^2 (dx+c)^2 \cosh(bx+a)}{9 b^3} - \frac{2 (dx+c)^4 \cosh(bx+a)}{3 b} + \frac{8 d^4 \cosh(bx+a)^3}{81 b^5} + \frac{160 d^3 (dx+c) \sinh(bx+a)}{9 b^4}$$
$$+ \frac{8 d (dx+c)^3 \sinh(bx+a)}{3 b^2} + \frac{4 d^2 (dx+c)^2 \cosh(bx+a) \sinh(bx+a)^2}{9 b^3} + \frac{(dx+c)^4 \cosh(bx+a) \sinh(bx+a)^2}{3 b}$$
$$- \frac{8 d^3 (dx+c) \sinh(bx+a)^3}{27 b^4} - \frac{4 d (dx+c)^3 \sinh(bx+a)^3}{9 b^2}$$

Result(type 3, 1216 leaves):

$$\frac{1}{b}\Bigg(\frac{1}{b^4}\Bigg(d^4\Bigg(-\frac{2 (bx+a)^4 \cosh(bx+a)}{3} + \frac{(bx+a)^4 \cosh(bx+a) \sinh(bx+a)^2}{3} + \frac{28 (bx+a)^3 \sinh(bx+a)}{9} - \frac{80 (bx+a)^2 \cosh(bx+a)}{9}$$
$$+ \frac{488 (bx+a) \sinh(bx+a)}{27} - \frac{1456 \cosh(bx+a)}{81} - \frac{4 (bx+a)^3 \sinh(bx+a) \cosh(bx+a)^2}{9} + \frac{4 (bx+a)^2 \sinh(bx+a)^2 \cosh(bx+a)}{9}$$
$$- \frac{8 (bx+a) \sinh(bx+a) \cosh(bx+a)^2}{27} + \frac{8 \sinh(bx+a)^2 \cosh(bx+a)}{81}\Bigg)\Bigg) - \frac{1}{b^4}\Bigg(4 d^4 a \Bigg(-\frac{2 (bx+a)^3 \cosh(bx+a)}{3}$$
$$+ \frac{(bx+a)^3 \cosh(bx+a) \sinh(bx+a)^2}{3} + \frac{7 (bx+a)^2 \sinh(bx+a)}{3} - \frac{40 (bx+a) \cosh(bx+a)}{9} + \frac{122 \sinh(bx+a)}{27}$$
$$- \frac{(bx+a)^2 \sinh(bx+a) \cosh(bx+a)^2}{3} + \frac{2 (bx+a) \sinh(bx+a)^2 \cosh(bx+a)}{9} - \frac{2 \sinh(bx+a) \cosh(bx+a)^2}{27}\Bigg)\Bigg)$$
$$+ \frac{1}{b^4}\Bigg(6 d^4 a^2 \Bigg(\frac{(bx+a)^2 \sinh(bx+a)^2 \cosh(bx+a)}{3} - \frac{2 (bx+a)^2 \cosh(bx+a)}{3} - \frac{2 (bx+a) \sinh(bx+a) \cosh(bx+a)^2}{9}$$
$$+ \frac{14 (bx+a) \sinh(bx+a)}{9} + \frac{2 \sinh(bx+a)^2 \cosh(bx+a)}{27} - \frac{40 \cosh(bx+a)}{27}\Bigg)\Bigg)$$
$$- \frac{4 d^4 a^3 \left(-\frac{2 (bx+a) \cosh(bx+a)}{3} + \frac{(bx+a) \sinh(bx+a)^2 \cosh(bx+a)}{3} + \frac{7 \sinh(bx+a)}{9} - \frac{\sinh(bx+a) \cosh(bx+a)^2}{9}\right)}{b^4}$$
$$+ \frac{d^4 a^4 \left(-\frac{2}{3} + \frac{\sinh(bx+a)^2}{3}\right) \cosh(bx+a)}{b^4} + \frac{1}{b^3}\Bigg(4 c d^3 \Bigg(-\frac{2 (bx+a)^3 \cosh(bx+a)}{3} + \frac{(bx+a)^3 \cosh(bx+a) \sinh(bx+a)^2}{3}$$
$$+ \frac{7 (bx+a)^2 \sinh(bx+a)}{3} - \frac{40 (bx+a) \cosh(bx+a)}{9} + \frac{122 \sinh(bx+a)}{27} - \frac{(bx+a)^2 \sinh(bx+a) \cosh(bx+a)^2}{3}$$

$$+\frac{2(bx+a)\sinh(bx+a)^2\cosh(bx+a)}{9}-\frac{2\sinh(bx+a)\cosh(bx+a)^2}{27}\Bigg)\Bigg)-\frac{1}{b^3}\Bigg(12\,c\,d^3\,a\Bigg(\frac{(bx+a)^2\sinh(bx+a)^2\cosh(bx+a)}{3}$$

$$-\frac{2(bx+a)^2\cosh(bx+a)}{3}-\frac{2(bx+a)\sinh(bx+a)\cosh(bx+a)^2}{9}+\frac{14(bx+a)\sinh(bx+a)}{9}+\frac{2\sinh(bx+a)^2\cosh(bx+a)}{27}$$

$$-\frac{40\cosh(bx+a)}{27}\Bigg)\Bigg)$$

$$+\frac{12\,c\,d^3\,a^2\left(-\frac{2(bx+a)\cosh(bx+a)}{3}+\frac{(bx+a)\sinh(bx+a)^2\cosh(bx+a)}{3}+\frac{7\sinh(bx+a)}{9}-\frac{\sinh(bx+a)\cosh(bx+a)^2}{9}\right)}{b^3}$$

$$-\frac{4\,c\,d^3\,a^3\left(-\frac{2}{3}+\frac{\sinh(bx+a)^2}{3}\right)\cosh(bx+a)}{b^3}+\frac{1}{b^2}\Bigg(6\,c^2\,d^2\Bigg(\frac{(bx+a)^2\sinh(bx+a)^2\cosh(bx+a)}{3}-\frac{2(bx+a)^2\cosh(bx+a)}{3}$$

$$-\frac{2(bx+a)\sinh(bx+a)\cosh(bx+a)^2}{9}+\frac{14(bx+a)\sinh(bx+a)}{9}+\frac{2\sinh(bx+a)^2\cosh(bx+a)}{27}-\frac{40\cosh(bx+a)}{27}\Bigg)\Bigg)$$

$$-\frac{12\,c^2\,d^2\,a\left(-\frac{2(bx+a)\cosh(bx+a)}{3}+\frac{(bx+a)\sinh(bx+a)^2\cosh(bx+a)}{3}+\frac{7\sinh(bx+a)}{9}-\frac{\sinh(bx+a)\cosh(bx+a)^2}{9}\right)}{b^2}$$

$$+\frac{6\,c^2\,d^2\,a^2\left(-\frac{2}{3}+\frac{\sinh(bx+a)^2}{3}\right)\cosh(bx+a)}{b^2}$$

$$+\frac{4\,c^3\,d\left(-\frac{2(bx+a)\cosh(bx+a)}{3}+\frac{(bx+a)\sinh(bx+a)^2\cosh(bx+a)}{3}+\frac{7\sinh(bx+a)}{9}-\frac{\sinh(bx+a)\cosh(bx+a)^2}{9}\right)}{b}$$

$$-\frac{4\,c^3\,d\,a\left(-\frac{2}{3}+\frac{\sinh(bx+a)^2}{3}\right)\cosh(bx+a)}{b}+c^4\left(-\frac{2}{3}+\frac{\sinh(bx+a)^2}{3}\right)\cosh(bx+a)\Bigg)$$

Problem 7: Result more than twice size of optimal antiderivative.

$$\int (dx+c)^3\sinh(bx+a)^3\,dx$$

Optimal(type 3, 161 leaves, 8 steps):

$$-\frac{40\,d^2\,(dx+c)\cosh(bx+a)}{9\,b^3}-\frac{2\,(dx+c)^3\cosh(bx+a)}{3\,b}+\frac{40\,d^3\sinh(bx+a)}{9\,b^4}+\frac{2\,d\,(dx+c)^2\sinh(bx+a)}{b^2}$$

$$+\frac{2 d^2 (d x+c) \cosh(b x+a) \sinh(b x+a)^2}{9 b^3}+\frac{(d x+c)^3 \cosh(b x+a) \sinh(b x+a)^2}{3 b}-\frac{2 d^3 \sinh(b x+a)^3}{27 b^4}-\frac{d (d x+c)^2 \sinh(b x+a)^3}{3 b^2}$$

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Result(type 3, 675 leaves):
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$$\frac{1}{b}\Bigg(\frac{1}{b^3}\Bigg(d^3\Bigg(-\frac{2 (b x+a)^3 \cosh(b x+a)}{3}+\frac{(b x+a)^3 \cosh(b x+a) \sinh(b x+a)^2}{3}+\frac{7 (b x+a)^2 \sinh(b x+a)}{3}-\frac{40 (b x+a) \cosh(b x+a)}{9}$$

$$+\frac{122 \sinh(b x+a)}{27}-\frac{(b x+a)^2 \sinh(b x+a) \cosh(b x+a)^2}{3}+\frac{2 (b x+a) \sinh(b x+a)^2 \cosh(b x+a)}{9}-\frac{2 \sinh(b x+a) \cosh(b x+a)^2}{27}\Bigg)\Bigg)$$

$$-\frac{1}{b^3}\Bigg(3 d^3 a\Bigg(\frac{(b x+a)^2 \sinh(b x+a)^2 \cosh(b x+a)}{3}-\frac{2 (b x+a)^2 \cosh(b x+a)}{3}-\frac{2 (b x+a) \sinh(b x+a) \cosh(b x+a)^2}{9}$$

$$+\frac{14 (b x+a) \sinh(b x+a)}{9}+\frac{2 \sinh(b x+a)^2 \cosh(b x+a)}{27}-\frac{40 \cosh(b x+a)}{27}\Bigg)\Bigg)+\frac{1}{b^2}\Bigg(3 d^2 c\Bigg(\frac{(b x+a)^2 \sinh(b x+a)^2 \cosh(b x+a)}{3}$$

$$-\frac{2 (b x+a)^2 \cosh(b x+a)}{3}-\frac{2 (b x+a) \sinh(b x+a) \cosh(b x+a)^2}{9}+\frac{14 (b x+a) \sinh(b x+a)}{9}+\frac{2 \sinh(b x+a)^2 \cosh(b x+a)}{27}$$

$$-\frac{40 \cosh(b x+a)}{27}\Bigg)\Bigg)$$

$$+\frac{3 d^3 a^2\left(-\frac{2 (b x+a) \cosh(b x+a)}{3}+\frac{(b x+a) \sinh(b x+a)^2 \cosh(b x+a)}{3}+\frac{7 \sinh(b x+a)}{9}-\frac{\sinh(b x+a) \cosh(b x+a)^2}{9}\right)}{b^3}$$

$$-\frac{6 d^2 a c\left(-\frac{2 (b x+a) \cosh(b x+a)}{3}+\frac{(b x+a) \sinh(b x+a)^2 \cosh(b x+a)}{3}+\frac{7 \sinh(b x+a)}{9}-\frac{\sinh(b x+a) \cosh(b x+a)^2}{9}\right)}{b^2}$$

$$+\frac{3 c^2 d\left(-\frac{2 (b x+a) \cosh(b x+a)}{3}+\frac{(b x+a) \sinh(b x+a)^2 \cosh(b x+a)}{3}+\frac{7 \sinh(b x+a)}{9}-\frac{\sinh(b x+a) \cosh(b x+a)^2}{9}\right)}{b}$$

$$-\frac{d^3 a^3\left(-\frac{2}{3}+\frac{\sinh(b x+a)^2}{3}\right) \cosh(b x+a)}{b^3}+\frac{3 d^2 a^2 c\left(-\frac{2}{3}+\frac{\sinh(b x+a)^2}{3}\right) \cosh(b x+a)}{b^2}$$

$$-\frac{3 d a c^2\left(-\frac{2}{3}+\frac{\sinh(b x+a)^2}{3}\right) \cosh(b x+a)}{b}+c^3\left(-\frac{2}{3}+\frac{\sinh(b x+a)^2}{3}\right) \cosh(b x+a)\Bigg)$$

Problem 8: Result more than twice size of optimal antiderivative.

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

Optimal(type 3, 111 leaves, 6 steps):

$$-\frac{14 d^2 \cosh(b x+a)}{9 b^3}-\frac{2 (d x+c)^2 \cosh(b x+a)}{3 b}+\frac{2 d^2 \cosh(b x+a)^3}{27 b^3}+\frac{4 d (d x+c) \sinh(b x+a)}{3 b^2}+\frac{(d x+c)^2 \cosh(b x+a) \sinh(b x+a)^2}{3 b}-\frac{2 d (d x+c) \sinh(b x+a)^3}{9 b^2}$$

Result(type 3, 319 leaves):

$$\frac{1}{b}\Bigg(\frac{1}{b^2}\bigg(d^2\bigg(\frac{(b x+a)^2 \sinh(b x+a)^2 \cosh(b x+a)}{3}-\frac{2 (b x+a)^2 \cosh(b x+a)}{3}-\frac{2 (b x+a) \sinh(b x+a) \cosh(b x+a)^2}{9}+\frac{14 (b x+a) \sinh(b x+a)}{9}+\frac{2 \sinh(b x+a)^2 \cosh(b x+a)}{27}-\frac{40 \cosh(b x+a)}{27}\bigg)\bigg)$$
$$-\frac{2 d^2 a\left(-\frac{2 (b x+a) \cosh(b x+a)}{3}+\frac{(b x+a) \sinh(b x+a)^2 \cosh(b x+a)}{3}+\frac{7 \sinh(b x+a)}{9}-\frac{\sinh(b x+a) \cosh(b x+a)^2}{9}\right)}{b^2}$$
$$+\frac{2 d c\left(-\frac{2 (b x+a) \cosh(b x+a)}{3}+\frac{(b x+a) \sinh(b x+a)^2 \cosh(b x+a)}{3}+\frac{7 \sinh(b x+a)}{9}-\frac{\sinh(b x+a) \cosh(b x+a)^2}{9}\right)}{b}$$
$$+\frac{d^2 a^2\left(-\frac{2}{3}+\frac{\sinh(b x+a)^2}{3}\right)\cosh(b x+a)}{b^2}-\frac{2 d a c\left(-\frac{2}{3}+\frac{\sinh(b x+a)^2}{3}\right)\cosh(b x+a)}{b}+c^2\left(-\frac{2}{3}+\frac{\sinh(b x+a)^2}{3}\right)\cosh(b x+a)\Bigg)$$

Problem 10: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 142 leaves, 9 steps):

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

Result(type 4, 540 leaves):

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

$$+\frac{6 d^2 c \,\mathrm{polylog}(2, \mathrm{e}^{b x+a})\, x}{b^2}-\frac{3 d^2 c \ln(1+\mathrm{e}^{b x+a})\, x^2}{b}+\frac{3 d^2 c \ln(1+\mathrm{e}^{b x+a})\, a^2}{b^3}-\frac{6 d^2 c \,\mathrm{polylog}(2, -\mathrm{e}^{b x+a})\, x}{b^2}+\frac{6 d a c^2 \operatorname{arctanh}(\mathrm{e}^{b x+a})}{b^2}$$

$$-\frac{6 d^2 a^2 c \operatorname{arctanh}(\mathrm{e}^{b x+a})}{b^3}+\frac{3 c^2 d \ln(1-\mathrm{e}^{b x+a})\, x}{b}-\frac{2 c^3 \operatorname{arctanh}(\mathrm{e}^{b x+a})}{b}-\frac{6 d^3 \,\mathrm{polylog}(4, -\mathrm{e}^{b x+a})}{b^4}+\frac{6 d^3 \,\mathrm{polylog}(4, \mathrm{e}^{b x+a})}{b^4}$$

$$+\frac{6 d^3 \,\mathrm{polylog}(3, -\mathrm{e}^{b x+a})\, x}{b^3}-\frac{6 d^2 c \,\mathrm{polylog}(3, \mathrm{e}^{b x+a})}{b^3}+\frac{6 d^2 c \,\mathrm{polylog}(3, -\mathrm{e}^{b x+a})}{b^3}+\frac{3 c^2 d \,\mathrm{polylog}(2, \mathrm{e}^{b x+a})}{b^2}-\frac{3 c^2 d \,\mathrm{polylog}(2, -\mathrm{e}^{b x+a})}{b^2}$$

$$+\frac{2 d^3 a^3 \operatorname{arctanh}(\mathrm{e}^{b x+a})}{b^4}+\frac{d^3 a^3 \ln(1-\mathrm{e}^{b x+a})}{b^4}-\frac{d^3 a^3 \ln(1+\mathrm{e}^{b x+a})}{b^4}+\frac{d^3 \ln(1-\mathrm{e}^{b x+a})\, x^3}{b}+\frac{3 d^3 \,\mathrm{polylog}(2, \mathrm{e}^{b x+a})\, x^2}{b^2}$$

$$-\frac{6 d^3 \,\mathrm{polylog}(3, \mathrm{e}^{b x+a})\, x}{b^3}-\frac{d^3 \ln(1+\mathrm{e}^{b x+a})\, x^3}{b}-\frac{3 d^3 \,\mathrm{polylog}(2, -\mathrm{e}^{b x+a})\, x^2}{b^2}$$

Problem 11: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 74 leaves, 5 steps):

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

Result(type 4, 239 leaves):

$$-\frac{2 (d^2 x^2+2 c d x+c^2)}{b (\mathrm{e}^{2 b x+2 a}-1)}+\frac{2 d c \ln(\mathrm{e}^{b x+a}-1)}{b^2}-\frac{4 d c \ln(\mathrm{e}^{b x+a})}{b^2}+\frac{2 d c \ln(1+\mathrm{e}^{b x+a})}{b^2}-\frac{2 d^2 x^2}{b}-\frac{4 d^2 a x}{b^2}-\frac{2 d^2 a^2}{b^3}+\frac{2 d^2 \ln(1-\mathrm{e}^{b x+a})\, x}{b^2}$$

$$+\frac{2 d^2 \ln(1-\mathrm{e}^{b x+a})\, a}{b^3}+\frac{2 d^2 \,\mathrm{polylog}(2, \mathrm{e}^{b x+a})}{b^3}+\frac{2 d^2 \ln(1+\mathrm{e}^{b x+a})\, x}{b^2}+\frac{2 d^2 \,\mathrm{polylog}(2, -\mathrm{e}^{b x+a})}{b^3}-\frac{2 d^2 a \ln(\mathrm{e}^{b x+a}-1)}{b^3}+\frac{4 d^2 a \ln(\mathrm{e}^{b x+a})}{b^3}$$

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

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

Optimal(type 4, 81 leaves, 6 steps):

$$\frac{(d x+c) \operatorname{arctanh}(\mathrm{e}^{b x+a})}{b}-\frac{d \operatorname{csch}(b x+a)}{2 b^2}-\frac{(d x+c) \coth(b x+a) \operatorname{csch}(b x+a)}{2 b}+\frac{d \,\mathrm{polylog}(2, -\mathrm{e}^{b x+a})}{2 b^2}-\frac{d \,\mathrm{polylog}(2, \mathrm{e}^{b x+a})}{2 b^2}$$

Result(type 4, 196 leaves):

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

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

Problem 13: Unable to integrate problem.

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

Optimal(type 4, 110 leaves, 7 steps):

$$\frac{(d x+c)^{3/2} \cosh(b x+a)}{b}-\frac{3 d^{3/2} e^{-a+\frac{b c}{d}} \operatorname{erf}\left(\frac{\sqrt{b}\, \sqrt{d x+c}}{\sqrt{d}}\right) \sqrt{\pi}}{8 b^{5/2}}+\frac{3 d^{3/2} e^{a-\frac{b c}{d}} \operatorname{erfi}\left(\frac{\sqrt{b}\, \sqrt{d x+c}}{\sqrt{d}}\right) \sqrt{\pi}}{8 b^{5/2}}-\frac{3 d \sinh(b x+a) \sqrt{d x+c}}{2 b^2}$$

Result(type 8, 16 leaves):

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

Problem 14: Unable to integrate problem.

$$\int \frac{\sinh(b x+a)}{\sqrt{d x+c}}\, dx$$

Optimal(type 4, 74 leaves, 5 steps):

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

Result(type 8, 16 leaves):

$$\int \frac{\sinh(b x+a)}{\sqrt{d x+c}}\, dx$$

Problem 15: Unable to integrate problem.

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

Optimal(type 4, 183 leaves, 10 steps):

$$-\frac{5 d (d x+c)^{3/2}}{16 b^2}-\frac{(d x+c)^{7/2}}{7 d}+\frac{(d x+c)^{5/2} \cosh(b x+a) \sinh(b x+a)}{2 b}-\frac{5 d (d x+c)^{3/2} \sinh(b x+a)^2}{8 b^2}$$
$$+\frac{15 d^{5/2} e^{-2 a+\frac{2 b c}{d}} \operatorname{erf}\left(\frac{\sqrt{2}\, \sqrt{b}\, \sqrt{d x+c}}{\sqrt{d}}\right) \sqrt{2}\, \sqrt{\pi}}{512 b^{7/2}}-\frac{15 d^{5/2} e^{2 a-\frac{2 b c}{d}} \operatorname{erfi}\left(\frac{\sqrt{2}\, \sqrt{b}\, \sqrt{d x+c}}{\sqrt{d}}\right) \sqrt{2}\, \sqrt{\pi}}{512 b^{7/2}}+\frac{15 d^2 \sinh(2 b x+2 a) \sqrt{d x+c}}{64 b^3}$$

Result(type 8, 18 leaves):

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

Problem 16: Unable to integrate problem.

$$\int \sinh(bx+a)^2 \sqrt{dx+c}\, dx$$

Optimal(type 4, 122 leaves, 8 steps):

$$-\frac{(dx+c)^{3/2}}{3d}+\frac{e^{-2a+\frac{2bc}{d}}\operatorname{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{dx+c}}{\sqrt{d}}\right)\sqrt{d}\sqrt{2}\sqrt{\pi}}{32b^{3/2}}-\frac{e^{2a-\frac{2bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{dx+c}}{\sqrt{d}}\right)\sqrt{d}\sqrt{2}\sqrt{\pi}}{32b^{3/2}}+\frac{\sinh(2bx+2a)\sqrt{dx+c}}{4b}$$

Result(type 8, 18 leaves):

$$\int \sinh(bx+a)^2 \sqrt{dx+c}\, dx$$

Problem 17: Unable to integrate problem.

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

Optimal(type 4, 109 leaves, 7 steps):

$$-\frac{e^{-2a+\frac{2bc}{d}}\operatorname{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{dx+c}}{\sqrt{d}}\right)\sqrt{b}\sqrt{2}\sqrt{\pi}}{2d^{3/2}}+\frac{e^{2a-\frac{2bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{dx+c}}{\sqrt{d}}\right)\sqrt{b}\sqrt{2}\sqrt{\pi}}{2d^{3/2}}-\frac{2\sinh(bx+a)^2}{d\sqrt{dx+c}}$$

Result(type 8, 18 leaves):

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

Problem 18: Unable to integrate problem.

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

Optimal(type 4, 162 leaves, 12 steps):

$$-\frac{e^{-3a+\frac{3bc}{d}}\operatorname{erf}\left(\frac{\sqrt{3}\sqrt{b}\sqrt{dx+c}}{\sqrt{d}}\right)\sqrt{3}\sqrt{\pi}}{24\sqrt{b}\sqrt{d}}+\frac{e^{3a-\frac{3bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{3}\sqrt{b}\sqrt{dx+c}}{\sqrt{d}}\right)\sqrt{3}\sqrt{\pi}}{24\sqrt{b}\sqrt{d}}+\frac{3e^{-a+\frac{bc}{d}}\operatorname{erf}\left(\frac{\sqrt{b}\sqrt{dx+c}}{\sqrt{d}}\right)\sqrt{\pi}}{8\sqrt{b}\sqrt{d}}$$
$$-\frac{3e^{a-\frac{bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{dx+c}}{\sqrt{d}}\right)\sqrt{\pi}}{8\sqrt{b}\sqrt{d}}$$

Result(type 8, 18 leaves):

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

Problem 19: Unable to integrate problem.

$$\int \frac{\sinh(bx+a)^3}{(dx+c)^{7/2}}\, dx$$

Optimal(type 4, 253 leaves, 19 steps):

$$-\frac{4 b \cosh(bx+a) \sinh(bx+a)^2}{5 d^2 (dx+c)^{3/2}} - \frac{2 \sinh(bx+a)^3}{5 d (dx+c)^{5/2}} - \frac{b^{5/2} e^{-a+\frac{bc}{d}} \operatorname{erf}\left(\frac{\sqrt{b}\sqrt{dx+c}}{\sqrt{d}}\right)\sqrt{\pi}}{5 d^{7/2}} - \frac{b^{5/2} e^{a-\frac{bc}{d}} \operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{dx+c}}{\sqrt{d}}\right)\sqrt{\pi}}{5 d^{7/2}}$$
$$+ \frac{3 b^{5/2} e^{-3a+\frac{3bc}{d}} \operatorname{erf}\left(\frac{\sqrt{3}\sqrt{b}\sqrt{dx+c}}{\sqrt{d}}\right)\sqrt{3}\sqrt{\pi}}{5 d^{7/2}} + \frac{3 b^{5/2} e^{3a-\frac{3bc}{d}} \operatorname{erfi}\left(\frac{\sqrt{3}\sqrt{b}\sqrt{dx+c}}{\sqrt{d}}\right)\sqrt{3}\sqrt{\pi}}{5 d^{7/2}} - \frac{16 b^2 \sinh(bx+a)}{5 d^3 \sqrt{dx+c}}$$
$$- \frac{24 b^2 \sinh(bx+a)^3}{5 d^3 \sqrt{dx+c}}$$

Result(type 8, 18 leaves):

$$\int \frac{\sinh(bx+a)^3}{(dx+c)^{7/2}}\, dx$$

Problem 23: Unable to integrate problem.

$$\int \left(\frac{x}{\sinh(x)^{7/2}} + \frac{3x\sqrt{\sinh(x)}}{5}\right) dx$$

Optimal(type 3, 31 leaves, 3 steps):

$$-\frac{2x\cosh(x)}{5\sinh(x)^{5/2}} - \frac{4}{15\sinh(x)^{3/2}} + \frac{6x\cosh(x)}{5\sqrt{\sinh(x)}} - \frac{12\sqrt{\sinh(x)}}{5}$$

Result(type 8, 16 leaves):

$$\int \left(\frac{x}{\sinh(x)^{7/2}} + \frac{3x\sqrt{\sinh(x)}}{5}\right) dx$$

Problem 24: Result unnecessarily involves higher level functions.

$$\int x^{1+m} \sinh(bx+a)\, dx$$

Optimal(type 4, 53 leaves, 3 steps):

$$-\frac{e^{a} x^{m} \Gamma(2+m, -b x)}{2 b^{2} (-b x)^{m}} + \frac{x^{m} \Gamma(2+m, b x)}{2 b^{2} e^{a} (b x)^{m}}$$

Result(type 5, 72 leaves):

$$\frac{x^{2+m} \operatorname{hypergeom}\left(\left[1+\frac{m}{2}\right], \left[\frac{1}{2}, 2+\frac{m}{2}\right], \frac{b^{2} x^{2}}{4}\right) \sinh(a)}{2+m} + \frac{b x^{3+m} \operatorname{hypergeom}\left(\left[\frac{3}{2}+\frac{m}{2}\right], \left[\frac{3}{2}, \frac{5}{2}+\frac{m}{2}\right], \frac{b^{2} x^{2}}{4}\right) \cosh(a)}{3+m}$$

Problem 25: Result unnecessarily involves higher level functions.

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

Optimal(type 4, 53 leaves, 3 steps):

$$\frac{e^{a} x^{m} \Gamma(1+m, -b x)}{2 b (-b x)^{m}} + \frac{x^{m} \Gamma(1+m, b x)}{2 b e^{a} (b x)^{m}}$$

Result(type 5, 72 leaves):

$$\frac{x^{1+m} \operatorname{hypergeom}\left(\left[\frac{1}{2}+\frac{m}{2}\right], \left[\frac{1}{2}, \frac{3}{2}+\frac{m}{2}\right], \frac{b^{2} x^{2}}{4}\right) \sinh(a)}{1+m} + \frac{b x^{2+m} \operatorname{hypergeom}\left(\left[1+\frac{m}{2}\right], \left[\frac{3}{2}, 2+\frac{m}{2}\right], \frac{b^{2} x^{2}}{4}\right) \cosh(a)}{2+m}$$

Problem 26: Unable to integrate problem.

$$\int x^{-3+m} \sinh(b x + a)^{2} \, dx$$

Optimal(type 4, 82 leaves, 5 steps):

$$\frac{x^{-2+m}}{2(2-m)} - \frac{b^{2} e^{2a} x^{m} \Gamma(-2+m, -2 b x)}{2^{m} (-b x)^{m}} - \frac{b^{2} x^{m} \Gamma(-2+m, 2 b x)}{2^{m} e^{2a} (b x)^{m}}$$

Result(type 8, 16 leaves):

$$\int x^{-3+m} \sinh(b x + a)^{2} \, dx$$

Problem 27: Unable to integrate problem.

$$\int \left(\frac{x}{\operatorname{csch}(x)^{3/2}} + \frac{x \sqrt{\operatorname{csch}(x)}}{3}\right) dx$$

Optimal(type 3, 16 leaves, 4 steps):

$$-\frac{4}{9 \operatorname{csch}(x)^{3/2}} + \frac{2 x \cosh(x)}{3 \sqrt{\operatorname{csch}(x)}}$$

Result(type 8, 16 leaves):

$$\int\left(\frac{x}{\operatorname{csch}(x)^{3/2}}+\frac{x\sqrt{\operatorname{csch}(x)}}{3}\right)dx$$

Problem 29: Result more than twice size of optimal antiderivative.

$$\int\frac{a+\mathrm{I}\,a\sinh(fx+e)}{(dx+c)^3}\,dx$$

Optimal(type 4, 119 leaves, 7 steps):

$$-\frac{a}{2d(dx+c)^2}-\frac{\mathrm{I}\,af\cosh(fx+e)}{2d^2(dx+c)}+\frac{\mathrm{I}\,af^2\cosh\left(-e+\frac{cf}{d}\right)\mathrm{Shi}\left(\frac{cf}{d}+fx\right)}{2d^3}-\frac{\mathrm{I}\,af^2\,\mathrm{Chi}\left(\frac{cf}{d}+fx\right)\sinh\left(-e+\frac{cf}{d}\right)}{2d^3}-\frac{\mathrm{I}\,a\sinh(fx+e)}{2d(dx+c)^2}$$

Result(type 4, 302 leaves):

$$-\frac{a}{2d(dx+c)^2}-\frac{\mathrm{I}\,af^3\mathrm{e}^{-fx-e}x}{4d(d^2f^2x^2+2cdf^2x+c^2f^2)}-\frac{\mathrm{I}\,af^3\mathrm{e}^{-fx-e}c}{4d^2(d^2f^2x^2+2cdf^2x+c^2f^2)}+\frac{\mathrm{I}\,af^2\mathrm{e}^{-fx-e}}{4d(d^2f^2x^2+2cdf^2x+c^2f^2)}$$
$$+\frac{\mathrm{I}\,af^2\mathrm{e}^{\frac{cf-de}{d}}\mathrm{Ei}_1\left(fx+e+\frac{cf-de}{d}\right)}{4d^3}-\frac{\mathrm{I}\,af^2\mathrm{e}^{fx+e}}{4d^3\left(\frac{cf}{d}+fx\right)^2}-\frac{\mathrm{I}\,af^2\mathrm{e}^{fx+e}}{4d^3\left(\frac{cf}{d}+fx\right)}-\frac{\mathrm{I}\,af^2\mathrm{e}^{-\frac{cf-de}{d}}\mathrm{Ei}_1\left(-fx-e-\frac{cf-de}{d}\right)}{4d^3}$$

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

$$\int(dx+c)^3(a+\mathrm{I}\,a\sinh(fx+e))^2\,dx$$

Optimal(type 3, 227 leaves, 10 steps):

$$\frac{3a^2cd^2x}{4f^2}+\frac{3a^2d^3x^2}{8f^2}+\frac{3a^2(dx+c)^4}{8d}+\frac{12\mathrm{I}\,a^2d^2(dx+c)\cosh(fx+e)}{f^3}+\frac{2\mathrm{I}\,a^2(dx+c)^3\cosh(fx+e)}{f}-\frac{12\mathrm{I}\,a^2d^3\sinh(fx+e)}{f^4}$$
$$-\frac{6\mathrm{I}\,a^2d(dx+c)^2\sinh(fx+e)}{f^2}-\frac{3a^2d^2(dx+c)\cosh(fx+e)\sinh(fx+e)}{4f^3}-\frac{a^2(dx+c)^3\cosh(fx+e)\sinh(fx+e)}{2f}+\frac{3a^2d^3\sinh(fx+e)^2}{8f^4}$$
$$+\frac{3a^2d(dx+c)^2\sinh(fx+e)^2}{4f^2}$$

Result(type 3, 1081 leaves):

$$\frac{1}{f}\left(\frac{6\mathrm{I}\,cd^2e^2a^2\cosh(fx+e)}{f^2}-\frac{6\mathrm{I}\,c^2dea^2\cosh(fx+e)}{f}-\frac{12\mathrm{I}\,cd^2ea^2((fx+e)\cosh(fx+e)-\sinh(fx+e))}{f^2}+\frac{cd^2a^2(fx+e)^3}{f^2}-\frac{d^3e^3a^2(fx+e)}{f^3}\right.$$
$$-\frac{3d^3e^2a^2\left(\frac{(fx+e)\cosh(fx+e)\sinh(fx+e)}{2}-\frac{(fx+e)^2}{4}-\frac{\cosh(fx+e)^2}{4}\right)}{f^3}$$

$$- \frac{3 c d^2 a^2 \left(\frac{(fx+e)^2 \cosh(fx+e) \sinh(fx+e)}{2} - \frac{(fx+e)^3}{6} - \frac{(fx+e) \cosh(fx+e)^2}{2} + \frac{\cosh(fx+e) \sinh(fx+e)}{4} + \frac{fx}{4} + \frac{e}{4} \right)}{f^2}$$

$$- \frac{3 c^2 d a^2 \left(\frac{(fx+e) \cosh(fx+e) \sinh(fx+e)}{2} - \frac{(fx+e)^2}{4} - \frac{\cosh(fx+e)^2}{4} \right)}{f} + \frac{d^3 e^3 a^2 \left(\frac{\cosh(fx+e) \sinh(fx+e)}{2} - \frac{fx}{2} - \frac{e}{2} \right)}{f^3}$$

$$+ \frac{2 I d^3 a^2 \left((fx+e)^3 \cosh(fx+e) - 3 (fx+e)^2 \sinh(fx+e) + 6 (fx+e) \cosh(fx+e) - 6 \sinh(fx+e) \right)}{f^3}$$

$$+ \frac{3 d^3 e a^2 \left(\frac{(fx+e)^2 \cosh(fx+e) \sinh(fx+e)}{2} - \frac{(fx+e)^3}{6} - \frac{(fx+e) \cosh(fx+e)^2}{2} + \frac{\cosh(fx+e) \sinh(fx+e)}{4} + \frac{fx}{4} + \frac{e}{4} \right)}{f^3}$$

$$+ \frac{3 c^2 d a^2 (fx+e)^2}{2 f} - \frac{d^3 e a^2 (fx+e)^3}{f^3} + \frac{3 d^3 e^2 a^2 (fx+e)^2}{2 f^3} + \frac{6 c d^2 e a^2 \left(\frac{(fx+e) \cosh(fx+e) \sinh(fx+e)}{2} - \frac{(fx+e)^2}{4} - \frac{\cosh(fx+e)^2}{4} \right)}{f^2}$$

$$- \frac{6 I d^3 e a^2 \left((fx+e)^2 \cosh(fx+e) - 2 (fx+e) \sinh(fx+e) + 2 \cosh(fx+e) \right)}{f^3} + \frac{6 I d^3 e^2 a^2 \left((fx+e) \cosh(fx+e) - \sinh(fx+e) \right)}{f^3}$$

$$+ \frac{6 I c d^2 a^2 \left((fx+e)^2 \cosh(fx+e) - 2 (fx+e) \sinh(fx+e) + 2 \cosh(fx+e) \right)}{f^2} + \frac{6 I c^2 d a^2 \left((fx+e) \cosh(fx+e) - \sinh(fx+e) \right)}{f}$$

$$+ \frac{3 c d^2 e^2 a^2 (fx+e)}{f^2} - \frac{3 c^2 d e a^2 (fx+e)}{f} - \frac{3 c d^2 e a^2 (fx+e)^2}{f^2} - \frac{3 c d^2 e^2 a^2 \left(\frac{\cosh(fx+e) \sinh(fx+e)}{2} - \frac{fx}{2} - \frac{e}{2} \right)}{f^2}$$

$$+ \frac{3 c^2 d e a^2 \left(\frac{\cosh(fx+e) \sinh(fx+e)}{2} - \frac{fx}{2} - \frac{e}{2} \right)}{f} - \frac{2 I d^3 e^3 a^2 \cosh(fx+e)}{f^3} - c^3 a^2 \left(\frac{\cosh(fx+e) \sinh(fx+e)}{2} - \frac{fx}{2} - \frac{e}{2} \right) + c^3 a^2 (fx+e)$$

$$- \frac{1}{f^3} \left(d^3 a^2 \left(\frac{(fx+e)^3 \cosh(fx+e) \sinh(fx+e)}{2} - \frac{(fx+e)^4}{8} - \frac{3 (fx+e)^2 \cosh(fx+e)^2}{4} + \frac{3 (fx+e) \cosh(fx+e) \sinh(fx+e)}{4} \right.\right.$$

$$\left.\left. + \frac{3 (fx+e)^2}{8} - \frac{3 \cosh(fx+e)^2}{8} \right) \right) + \frac{d^3 a^2 (fx+e)^4}{4 f^3} + 2 I c^3 a^2 \cosh(fx+e) \Big)$$

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

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

Optimal(type 4, 249 leaves, 10 steps):

$$\frac{(dx+c)^3}{3a^2f}-\frac{2d(dx+c)^2\ln(1+\mathrm{I}\,e^{fx+e})}{a^2f^2}+\frac{4d^3\ln\left(\cosh\left(\frac{e}{2}+\frac{\mathrm{I}\pi}{4}+\frac{fx}{2}\right)\right)}{a^2f^4}-\frac{4d^2(dx+c)\,\mathrm{polylog}(2,-\mathrm{I}\,e^{fx+e})}{a^2f^3}+\frac{4d^3\,\mathrm{polylog}(3,-\mathrm{I}\,e^{fx+e})}{a^2f^4}$$
$$+\frac{d(dx+c)^2\,\mathrm{sech}\left(\frac{e}{2}+\frac{\mathrm{I}\pi}{4}+\frac{fx}{2}\right)^2}{2a^2f^2}-\frac{2d^2(dx+c)\tanh\left(\frac{e}{2}+\frac{\mathrm{I}\pi}{4}+\frac{fx}{2}\right)}{a^2f^3}+\frac{(dx+c)^3\tanh\left(\frac{e}{2}+\frac{\mathrm{I}\pi}{4}+\frac{fx}{2}\right)}{3a^2f}$$
$$+\frac{(dx+c)^3\,\mathrm{sech}\left(\frac{e}{2}+\frac{\mathrm{I}\pi}{4}+\frac{fx}{2}\right)^2\tanh\left(\frac{e}{2}+\frac{\mathrm{I}\pi}{4}+\frac{fx}{2}\right)}{6a^2f}$$

Result(type 4, 722 leaves):

$$\frac{1}{3(e^{fx+e}-\mathrm{I})^3f^3a^2}\Big(2\big(-\mathrm{I}f^2d^3x^3-6\mathrm{I}cd^2e^{2fx+2e}-3fd^3x^2e^{fx+e}-3fc^2de^{fx+e}+3f^2d^3x^3e^{fx+e}-6\mathrm{I}fcd^2xe^{2fx+2e}+6\mathrm{I}d^3x-6\mathrm{I}d^3xe^{2fx+2e}$$
$$-12d^3xe^{fx+e}-12cd^2e^{fx+e}+3f^2c^3e^{fx+e}-3\mathrm{I}fd^3x^2e^{2fx+2e}+9f^2cd^2x^2e^{fx+e}+9f^2c^2dxe^{fx+e}-3\mathrm{I}f^2cd^2x^2-3\mathrm{I}fc^2de^{2fx+2e}-\mathrm{I}f^2c^3$$
$$-3\mathrm{I}f^2c^2dx-6fcd^2xe^{fx+e}+6\mathrm{I}cd^2\big)\Big)-\frac{2d^3e^2x}{f^3a^2}+\frac{2d^2cx^2}{fa^2}+\frac{2d^2ce^2}{f^3a^2}-\frac{2d^3\ln(1+\mathrm{I}\,e^{fx+e})x^2}{f^2a^2}-\frac{4d^3\,\mathrm{polylog}(2,-\mathrm{I}\,e^{fx+e})x}{f^3a^2}$$
$$-\frac{4d^2c\,\mathrm{polylog}(2,-\mathrm{I}\,e^{fx+e})}{f^3a^2}+\frac{4d^2cex}{f^2a^2}-\frac{4d^2\ln(1+\mathrm{I}\,e^{fx+e})cx}{f^2a^2}-\frac{4d^2\ln(1+\mathrm{I}\,e^{fx+e})ce}{f^3a^2}-\frac{4d^2\ln(e^{fx+e})ce}{f^3a^2}+\frac{4d^2\ln(e^{fx+e}-\mathrm{I})ce}{f^3a^2}$$
$$+\frac{2d^3\ln(1+\mathrm{I}\,e^{fx+e})e^2}{f^4a^2}+\frac{2d^3x^3}{3fa^2}+\frac{2d\ln(e^{fx+e})c^2}{f^2a^2}-\frac{2d^3\ln(e^{fx+e}-\mathrm{I})e^2}{f^4a^2}-\frac{2d\ln(e^{fx+e}-\mathrm{I})c^2}{f^2a^2}+\frac{2d^3\ln(e^{fx+e})e^2}{f^4a^2}-\frac{4d^3e^3}{3f^4a^2}$$
$$+\frac{4d^3\,\mathrm{polylog}(3,-\mathrm{I}\,e^{fx+e})}{a^2f^4}+\frac{4d^3\ln(e^{fx+e}-\mathrm{I})}{f^4a^2}-\frac{4d^3\ln(e^{fx+e})}{f^4a^2}$$

Problem 36: Unable to integrate problem.

$$\int\frac{\sqrt{a+\mathrm{I}a\sinh(fx+e)}}{x}\,dx$$

Optimal(type 4, 85 leaves, 4 steps):

$$\sinh\left(\frac{e}{2}+\frac{\mathrm{I}\pi}{4}\right)\mathrm{sech}\left(\frac{e}{2}+\frac{\mathrm{I}\pi}{4}+\frac{fx}{2}\right)\mathrm{Shi}\left(\frac{fx}{2}\right)\sqrt{a+\mathrm{I}a\sinh(fx+e)}+\mathrm{Chi}\left(\frac{fx}{2}\right)\mathrm{sech}\left(\frac{e}{2}+\frac{\mathrm{I}\pi}{4}+\frac{fx}{2}\right)\cosh\left(\frac{e}{2}+\frac{\mathrm{I}\pi}{4}\right)\sqrt{a+\mathrm{I}a\sinh(fx+e)}$$

Result(type 8, 20 leaves):

$$\int\frac{\sqrt{a+\mathrm{I}a\sinh(fx+e)}}{x}\,dx$$

Problem 37: Unable to integrate problem.

$$\int\frac{\sqrt{a+\mathrm{I}a\sinh(fx+e)}}{x^3}\,dx$$

Optimal(type 4, 145 leaves, 6 steps):

$$-\frac{\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}{2\,x^2}+\frac{f^2\sinh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}\right)\mathrm{sech}\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)\mathrm{Shi}\left(\frac{fx}{2}\right)\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}{8}$$
$$+\frac{f^2\,\mathrm{Chi}\left(\frac{fx}{2}\right)\mathrm{sech}\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)\cosh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}\right)\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}{8}-\frac{f\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}\,\tanh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)}{4\,x}$$

Result(type 8, 20 leaves):

$$\int\frac{\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}{x^3}\,\mathrm{d}x$$

Problem 38: Unable to integrate problem.

$$\int x^2\,(a+\mathrm{I}\,a\sinh(fx+e))^{3/2}\,\mathrm{d}x$$

Optimal(type 3, 224 leaves, 7 steps):

$$-\frac{32\,a\,x\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}{3\,f^2}-\frac{16\,a\,x\cosh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)^2\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}{9\,f^2}$$
$$+\frac{4\,a\,x^2\cosh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)\sinh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}{3\,f}+\frac{224\,a\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}\,\tanh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)}{9\,f^3}$$
$$+\frac{8\,a\,x^2\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}\,\tanh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)}{3\,f}+\frac{32\,a\sinh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)^2\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}\,\tanh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)}{27\,f^3}$$

Result(type 8, 20 leaves):

$$\int x^2\,(a+\mathrm{I}\,a\sinh(fx+e))^{3/2}\,\mathrm{d}x$$

Problem 39: Unable to integrate problem.

$$\int x^2\,(a+\mathrm{I}\,a\sinh(dx+c))^{5/2}\,\mathrm{d}x$$

Optimal(type 3, 377 leaves, 10 steps):

$$-\frac{256\,a^2\,x\sqrt{a+\mathrm{I}\,a\sinh(dx+c)}}{15\,d^2}-\frac{128\,a^2\,x\cosh\left(\frac{c}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{dx}{2}\right)^2\sqrt{a+\mathrm{I}\,a\sinh(dx+c)}}{45\,d^2}-\frac{32\,a^2\,x\cosh\left(\frac{c}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{dx}{2}\right)^4\sqrt{a+\mathrm{I}\,a\sinh(dx+c)}}{25\,d^2}$$

$$+\frac{32 a^2 x^2 \cosh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)\sinh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)\sqrt{a+I a\sinh(dx+c)}}{15 d}$$

$$+\frac{8 a^2 x^2 \cosh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)^3\sinh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)\sqrt{a+I a\sinh(dx+c)}}{5 d}+\frac{9536 a^2\sqrt{a+I a\sinh(dx+c)}\tanh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)}{225 d^3}$$

$$+\frac{64 a^2 x^2\sqrt{a+I a\sinh(dx+c)}\tanh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)}{15 d}+\frac{2432 a^2\sinh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)^2\sqrt{a+I a\sinh(dx+c)}\tanh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)}{675 d^3}$$

$$+\frac{64 a^2\sinh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)^4\sqrt{a+I a\sinh(dx+c)}\tanh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)}{125 d^3}$$

Result(type 8, 20 leaves):

$$\int x^2\,(a+I a\sinh(dx+c))^{5/2}\,dx$$

Problem 40: Unable to integrate problem.

$$\int \frac{(a+I a\sinh(dx+c))^{5/2}}{x}\,dx$$

Optimal(type 4, 279 leaves, 12 steps):

$$\frac{5 a^2\sinh\left(\frac{c}{2}+\frac{I\pi}{4}\right)\operatorname{sech}\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)\operatorname{Shi}\left(\frac{dx}{2}\right)\sqrt{a+I a\sinh(dx+c)}}{2}$$

$$+\frac{5 I a^2\cosh\left(\frac{3c}{2}+\frac{I\pi}{4}\right)\operatorname{sech}\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)\operatorname{Shi}\left(\frac{3dx}{2}\right)\sqrt{a+I a\sinh(dx+c)}}{4}$$

$$-\frac{a^2\sinh\left(\frac{5c}{2}+\frac{I\pi}{4}\right)\operatorname{sech}\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)\operatorname{Shi}\left(\frac{5dx}{2}\right)\sqrt{a+I a\sinh(dx+c)}}{4}$$

$$-\frac{a^2\operatorname{Chi}\left(\frac{5dx}{2}\right)\operatorname{sech}\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)\cosh\left(\frac{5c}{2}+\frac{I\pi}{4}\right)\sqrt{a+I a\sinh(dx+c)}}{4}$$

$$+\frac{5 a^2\operatorname{Chi}\left(\frac{dx}{2}\right)\operatorname{sech}\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)\cosh\left(\frac{c}{2}+\frac{I\pi}{4}\right)\sqrt{a+I a\sinh(dx+c)}}{2}$$

$$+\frac{5 I a^2\operatorname{Chi}\left(\frac{3dx}{2}\right)\operatorname{sech}\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)\sinh\left(\frac{3c}{2}+\frac{I\pi}{4}\right)\sqrt{a+I a\sinh(dx+c)}}{4}$$

Result(type 8, 20 leaves):

$$\int \frac{(a+\mathrm{I}\,a\sinh(d\,x+c))^{5/2}}{x}\,dx$$

Problem 41: Unable to integrate problem.

$$\int \frac{x^2}{(a+\mathrm{I}\,a\sinh(fx+e))^{3/2}}\,dx$$

Optimal(type 4, 374 leaves, 10 steps):

$$\frac{2\,x}{a\,f^2\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}-\frac{4\arctan\left(\sinh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)\right)\cosh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)}{a\,f^3\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}-\frac{\mathrm{I}\,x^2\operatorname{arctanh}\left(\mathrm{e}^{\frac{e}{2}+\frac{3\,\mathrm{I}\,\pi}{4}+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)}{a\,f\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}$$
$$+\frac{2\,\mathrm{I}\,x\cosh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)\operatorname{polylog}\left(2,\mathrm{e}^{\frac{e}{2}+\frac{3\,\mathrm{I}\,\pi}{4}+\frac{fx}{2}}\right)}{a\,f^2\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}-\frac{2\,\mathrm{I}\,x\cosh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)\operatorname{polylog}\left(2,-\mathrm{e}^{\frac{e}{2}+\frac{3\,\mathrm{I}\,\pi}{4}+\frac{fx}{2}}\right)}{a\,f^2\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}$$
$$-\frac{4\,\mathrm{I}\cosh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)\operatorname{polylog}\left(3,\mathrm{e}^{\frac{e}{2}+\frac{3\,\mathrm{I}\,\pi}{4}+\frac{fx}{2}}\right)}{a\,f^3\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}+\frac{4\,\mathrm{I}\cosh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)\operatorname{polylog}\left(3,-\mathrm{e}^{\frac{e}{2}+\frac{3\,\mathrm{I}\,\pi}{4}+\frac{fx}{2}}\right)}{a\,f^3\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}+\frac{x^2\tanh\left(\frac{e}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{fx}{2}\right)}{2\,a\,f\sqrt{a+\mathrm{I}\,a\sinh(fx+e)}}$$

Result(type 8, 20 leaves):

$$\int \frac{x^2}{(a+\mathrm{I}\,a\sinh(fx+e))^{3/2}}\,dx$$

Problem 42: Unable to integrate problem.

$$\int \frac{x^2}{(a+\mathrm{I}\,a\sinh(d\,x+c))^{5/2}}\,dx$$

Optimal(type 4, 500 leaves, 13 steps):

$$\frac{3\,x}{4\,a^2\,d^2\sqrt{a+\mathrm{I}\,a\sinh(d\,x+c)}}-\frac{5\arctan\left(\sinh\left(\frac{c}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{d\,x}{2}\right)\right)\cosh\left(\frac{c}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{d\,x}{2}\right)}{3\,a^2\,d^3\sqrt{a+\mathrm{I}\,a\sinh(d\,x+c)}}-\frac{3\,\mathrm{I}\,x^2\operatorname{arctanh}\left(\mathrm{e}^{\frac{c}{2}+\frac{3\,\mathrm{I}\,\pi}{4}+\frac{d\,x}{2}}\right)\cosh\left(\frac{c}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{d\,x}{2}\right)}{8\,a^2\,d\sqrt{a+\mathrm{I}\,a\sinh(d\,x+c)}}$$
$$+\frac{3\,\mathrm{I}\,x\cosh\left(\frac{c}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{d\,x}{2}\right)\operatorname{polylog}\left(2,\mathrm{e}^{\frac{c}{2}+\frac{3\,\mathrm{I}\,\pi}{4}+\frac{d\,x}{2}}\right)}{4\,a^2\,d^2\sqrt{a+\mathrm{I}\,a\sinh(d\,x+c)}}-\frac{3\,\mathrm{I}\,x\cosh\left(\frac{c}{2}+\frac{\mathrm{I}\,\pi}{4}+\frac{d\,x}{2}\right)\operatorname{polylog}\left(2,-\mathrm{e}^{\frac{c}{2}+\frac{3\,\mathrm{I}\,\pi}{4}+\frac{d\,x}{2}}\right)}{4\,a^2\,d^2\sqrt{a+\mathrm{I}\,a\sinh(d\,x+c)}}$$

$$-\frac{3 I \cosh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right) \operatorname{polylog}\left(3, e^{\frac{c}{2}+\frac{3I\pi}{4}+\frac{dx}{2}}\right)}{2 a^2 d^3 \sqrt{a+I a \sinh(dx+c)}}+\frac{3 I \cosh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right) \operatorname{polylog}\left(3, -e^{\frac{c}{2}+\frac{3I\pi}{4}+\frac{dx}{2}}\right)}{2 a^2 d^3 \sqrt{a+I a \sinh(dx+c)}}+\frac{x \operatorname{sech}\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)^2}{6 a^2 d^2 \sqrt{a+I a \sinh(dx+c)}}$$

$$-\frac{\tanh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)}{6 a^2 d^3 \sqrt{a+I a \sinh(dx+c)}}+\frac{3 x^2 \tanh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)}{16 a^2 d \sqrt{a+I a \sinh(dx+c)}}+\frac{x^2 \operatorname{sech}\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)^2 \tanh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)}{8 a^2 d \sqrt{a+I a \sinh(dx+c)}}$$

Result(type 8, 20 leaves):

$$\int \frac{x^2}{(a+I a \sinh(dx+c))^{5/2}}\, dx$$

Problem 43: Unable to integrate problem.

$$\int \frac{x}{(a+I a \sinh(dx+c))^{5/2}}\, dx$$

Optimal(type 4, 302 leaves, 8 steps):

$$\frac{3}{8 a^2 d^2 \sqrt{a+I a \sinh(dx+c)}}-\frac{3 I x \operatorname{arctanh}\left(e^{\frac{c}{2}+\frac{3I\pi}{4}+\frac{dx}{2}}\right) \cosh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)}{8 a^2 d \sqrt{a+I a \sinh(dx+c)}}+\frac{3 I \cosh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right) \operatorname{polylog}\left(2, e^{\frac{c}{2}+\frac{3I\pi}{4}+\frac{dx}{2}}\right)}{8 a^2 d^2 \sqrt{a+I a \sinh(dx+c)}}$$

$$-\frac{3 I \cosh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right) \operatorname{polylog}\left(2, -e^{\frac{c}{2}+\frac{3I\pi}{4}+\frac{dx}{2}}\right)}{8 a^2 d^2 \sqrt{a+I a \sinh(dx+c)}}+\frac{\operatorname{sech}\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)^2}{12 a^2 d^2 \sqrt{a+I a \sinh(dx+c)}}+\frac{3 x \tanh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)}{16 a^2 d \sqrt{a+I a \sinh(dx+c)}}$$

$$+\frac{x \operatorname{sech}\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)^2 \tanh\left(\frac{c}{2}+\frac{I\pi}{4}+\frac{dx}{2}\right)}{8 a^2 d \sqrt{a+I a \sinh(dx+c)}}$$

Result(type 8, 18 leaves):

$$\int \frac{x}{(a+I a \sinh(dx+c))^{5/2}}\, dx$$

Problem 44: Unable to integrate problem.

$$\int (dx+c)^m (a+I a \sinh(fx+e))^3\, dx$$

Optimal(type 4, 390 leaves, 12 steps):

$$\frac{5 a^3 (dx+c)^{1+m}}{2 d (1+m)} - \frac{I 3^{-1-m} a^3 e^{3e - \frac{3cf}{d}} (dx+c)^m \Gamma\left(1+m, -\frac{3f(dx+c)}{d}\right)}{8 f \left(-\frac{f(dx+c)}{d}\right)^m} - \frac{3\, 2^{-3-m} a^3 e^{2e - \frac{2cf}{d}} (dx+c)^m \Gamma\left(1+m, -\frac{2f(dx+c)}{d}\right)}{f \left(-\frac{f(dx+c)}{d}\right)^m}$$

$$+ \frac{15 I a^3 e^{e - \frac{cf}{d}} (dx+c)^m \Gamma\left(1+m, -\frac{f(dx+c)}{d}\right)}{8 f \left(-\frac{f(dx+c)}{d}\right)^m} + \frac{15 I a^3 e^{-e + \frac{cf}{d}} (dx+c)^m \Gamma\left(1+m, \frac{f(dx+c)}{d}\right)}{8 f \left(\frac{f(dx+c)}{d}\right)^m}$$

$$+ \frac{3\, 2^{-3-m} a^3 e^{-2e + \frac{2cf}{d}} (dx+c)^m \Gamma\left(1+m, \frac{2f(dx+c)}{d}\right)}{f \left(\frac{f(dx+c)}{d}\right)^m} - \frac{I 3^{-1-m} a^3 e^{-3e + \frac{3cf}{d}} (dx+c)^m \Gamma\left(1+m, \frac{3f(dx+c)}{d}\right)}{8 f \left(\frac{f(dx+c)}{d}\right)^m}$$

Result(type 8, 24 leaves):

$$\int (dx+c)^m (a + I a \sinh(fx+e))^3 \, dx$$

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

$$\int \frac{(fx+e)^2 \sinh(dx+c)}{a + I a \sinh(dx+c)} \, dx$$

Optimal(type 4, 112 leaves, 8 steps):

$$\frac{I (fx+e)^2}{a d} - \frac{I (fx+e)^3}{3 a f} - \frac{4 I f (fx+e) \ln\left(1 + I e^{dx+c}\right)}{a d^2} - \frac{4 I f^2 \operatorname{polylog}\left(2, -I e^{dx+c}\right)}{a d^3} + \frac{I (fx+e)^2 \tanh\left(\frac{c}{2} + \frac{I\pi}{4} + \frac{dx}{2}\right)}{a d}$$

Result(type 4, 268 leaves):

$$-\frac{I x^3 f^2}{3a} - \frac{I e f x^2}{a} - \frac{I e^2 x}{a} - \frac{2 \left(x^2 f^2 + 2 e f x + e^2\right)}{d a \left(e^{dx+c} - I\right)} + \frac{4 I \ln\left(e^{dx+c}\right) e f}{a d^2} - \frac{4 I \ln\left(e^{dx+c} - I\right) e f}{a d^2} + \frac{2 I f^2 x^2}{a d} + \frac{4 I f^2 c x}{a d^2} + \frac{2 I f^2 c^2}{a d^3} - \frac{4 I f^2 \ln\left(1 + I e^{dx+c}\right) x}{a d^2}$$

$$- \frac{4 I f^2 \ln\left(1 + I e^{dx+c}\right) c}{a d^3} - \frac{4 I f^2 \operatorname{polylog}\left(2, -I e^{dx+c}\right)}{a d^3} - \frac{4 I f^2 c \ln\left(e^{dx+c}\right)}{a d^3} + \frac{4 I f^2 c \ln\left(e^{dx+c} - I\right)}{a d^3}$$

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

$$\int \frac{(fx+e)^3 \operatorname{csch}(dx+c)}{a + I a \sinh(dx+c)} \, dx$$

Optimal(type 4, 288 leaves, 17 steps):

$$-\frac{I (fx+e)^3}{a d} - \frac{2 (fx+e)^3 \operatorname{arctanh}\left(e^{dx+c}\right)}{a d} + \frac{6 I f (fx+e)^2 \ln\left(1 + I e^{dx+c}\right)}{a d^2} - \frac{3 f (fx+e)^2 \operatorname{polylog}\left(2, -e^{dx+c}\right)}{a d^2} + \frac{12 I f^2 (fx+e) \operatorname{polylog}\left(2, -I e^{dx+c}\right)}{a d^3}$$

$$+\frac{3 f (f x+e)^2 \operatorname{polylog}(2, e^{d x+c})}{a d^2}+\frac{6 f^2 (f x+e) \operatorname{polylog}(3, -e^{d x+c})}{a d^3}-\frac{12 I f^3 \operatorname{polylog}(3, -I e^{d x+c})}{a d^4}-\frac{6 f^2 (f x+e) \operatorname{polylog}(3, e^{d x+c})}{a d^3}$$
$$-\frac{6 f^3 \operatorname{polylog}(4, -e^{d x+c})}{a d^4}+\frac{6 f^3 \operatorname{polylog}(4, e^{d x+c})}{a d^4}-\frac{I (f x+e)^3 \tanh\left(\frac{c}{2}+\frac{I \pi}{4}+\frac{d x}{2}\right)}{a d}$$

Result(type 4, 1033 leaves):

$$-\frac{e^3 \ln(1+e^{d x+c})}{a d}+\frac{e^3 \ln(e^{d x+c}-1)}{a d}+\frac{6 e f^2 \operatorname{polylog}(3, -e^{d x+c})}{a d^3}-\frac{f^3 c^3 \ln(e^{d x+c}-1)}{a d^4}-\frac{3 e^2 f \operatorname{polylog}(2, -e^{d x+c})}{a d^2}+\frac{3 e^2 f \operatorname{polylog}(2, e^{d x+c})}{a d^2}$$
$$+\frac{4 I f^3 c^3}{a d^4}-\frac{2 I f^3 x^3}{a d}-\frac{6 e f^2 \operatorname{polylog}(3, e^{d x+c})}{a d^3}+\frac{f^3 c^3 \ln(1-e^{d x+c})}{a d^4}-\frac{f^3 \ln(1+e^{d x+c}) x^3}{a d}-\frac{3 f^3 \operatorname{polylog}(2, -e^{d x+c}) x^2}{a d^2}$$
$$+\frac{6 f^3 \operatorname{polylog}(3, -e^{d x+c}) x}{a d^3}+\frac{f^3 \ln(1-e^{d x+c}) x^3}{a d}+\frac{3 f^3 \operatorname{polylog}(2, e^{d x+c}) x^2}{a d^2}-\frac{6 f^3 \operatorname{polylog}(3, e^{d x+c}) x}{a d^3}+\frac{12 I e f^2 \ln(1+I e^{d x+c}) x}{a d^2}$$
$$+\frac{12 I e f^2 \ln(1+I e^{d x+c}) c}{a d^3}-\frac{12 I e f^2 c x}{a d^2}-\frac{12 I e f^2 c \ln(e^{d x+c}-I)}{a d^3}+\frac{12 I e f^2 c \ln(e^{d x+c})}{a d^3}-\frac{12 I f^3 \operatorname{polylog}(3, -I e^{d x+c})}{a d^4}-\frac{6 f^3 \operatorname{polylog}(4, -e^{d x+c})}{a d^4}$$
$$+\frac{6 f^3 \operatorname{polylog}(4, e^{d x+c})}{a d^4}+\frac{3 e f^2 c^2 \ln(e^{d x+c}-1)}{a d^3}-\frac{3 c f e^2 \ln(e^{d x+c}-1)}{a d^2}+\frac{6 I f^3 \ln(1+I e^{d x+c}) x^2}{a d^2}-\frac{6 I f^3 \ln(1+I e^{d x+c}) c^2}{a d^4}$$
$$+\frac{12 I f^3 \operatorname{polylog}(2, -I e^{d x+c}) x}{a d^3}+\frac{6 I f^3 c^2 x}{a d^3}-\frac{6 I e f^2 x^2}{a d}-\frac{6 I e f^2 c^2}{a d^3}+\frac{12 I e f^2 \operatorname{polylog}(2, -I e^{d x+c})}{a d^3}-\frac{6 I f^3 c^2 \ln(e^{d x+c})}{a d^4}+\frac{6 I f^3 c^2 \ln(e^{d x+c}-I)}{a d^4}$$
$$-\frac{6 I e^2 f \ln(e^{d x+c})}{a d^2}+\frac{6 I e^2 f \ln(e^{d x+c}-I)}{a d^2}+\frac{3 \ln(1-e^{d x+c}) c e^2 f}{a d^2}+\frac{3 \ln(1-e^{d x+c}) e^2 f x}{a d}-\frac{3 \ln(1+e^{d x+c}) e^2 f x}{a d}+\frac{6 e f^2 \operatorname{polylog}(2, e^{d x+c}) x}{a d^2}$$
$$-\frac{3 e f^2 \ln(1+e^{d x+c}) x^2}{a d}-\frac{6 e f^2 \operatorname{polylog}(2, -e^{d x+c}) x}{a d^2}+\frac{3 e f^2 \ln(1-e^{d x+c}) x^2}{a d}-\frac{3 e f^2 \ln(1-e^{d x+c}) c^2}{a d^3}+\frac{2 (x^3 f^3+3 e f^2 x^2+3 e^2 f x+e^3)}{d a (e^{d x+c}-I)}$$

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

$$\int \frac{(f x+e)^3 \operatorname{csch}(d x+c)^3}{a+I a \sinh(d x+c)}\, dx$$

Optimal(type 4, 504 leaves, 40 steps):

$$\frac{I (f x+e)^3 \tanh\left(\frac{c}{2}+\frac{I \pi}{4}+\frac{d x}{2}\right)}{a d}-\frac{6 f^2 (f x+e) \operatorname{arctanh}(e^{d x+c})}{a d^3}+\frac{3 (f x+e)^3 \operatorname{arctanh}(e^{d x+c})}{a d}+\frac{I (f x+e)^3 \coth(d x+c)}{a d}$$
$$-\frac{3 f (f x+e)^2 \operatorname{csch}(d x+c)}{2 a d^2}-\frac{(f x+e)^3 \coth(d x+c) \operatorname{csch}(d x+c)}{2 a d}-\frac{6 I f (f x+e)^2 \ln(1+I e^{d x+c})}{a d^2}+\frac{12 I f^3 \operatorname{polylog}(3, -I e^{d x+c})}{a d^4}$$
$$-\frac{3 f^3 \operatorname{polylog}(2, -e^{d x+c})}{a d^4}+\frac{9 f (f x+e)^2 \operatorname{polylog}(2, -e^{d x+c})}{2 a d^2}+\frac{2 I (f x+e)^3}{a d}+\frac{3 f^3 \operatorname{polylog}(2, e^{d x+c})}{a d^4}-\frac{9 f (f x+e)^2 \operatorname{polylog}(2, e^{d x+c})}{2 a d^2}$$
$$-\frac{3 I f (f x+e)^2 \ln(1-e^{2 d x+2 c})}{a d^2}-\frac{9 f^2 (f x+e) \operatorname{polylog}(3, -e^{d x+c})}{a d^3}-\frac{12 I f^2 (f x+e) \operatorname{polylog}(2, -I e^{d x+c})}{a d^3}+\frac{9 f^2 (f x+e) \operatorname{polylog}(3, e^{d x+c})}{a d^3}$$

$$-\frac{3 I f^2 (fx+e) \operatorname{polylog}(2, e^{2dx+2c})}{a d^3} + \frac{9 f^3 \operatorname{polylog}(4, -e^{dx+c})}{a d^4} - \frac{9 f^3 \operatorname{polylog}(4, e^{dx+c})}{a d^4} + \frac{3 I f^3 \operatorname{polylog}(3, e^{2dx+2c})}{2 a d^4}$$

Result(type ?, 2057 leaves): Display of huge result suppressed!

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

$$\int \frac{(fx+e)\sinh(dx+c)}{a+b\sinh(dx+c)}\, dx$$

Optimal(type 4, 198 leaves, 10 steps):

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

Result(type 4, 439 leaves):

$$\frac{fx^2}{2b} + \frac{ex}{b} + \frac{2 a e \operatorname{arctanh}\left(\frac{2 e^{dx+c} b + 2a}{2\sqrt{a^2+b^2}}\right)}{b d \sqrt{a^2+b^2}} - \frac{a f \ln\left(\frac{-e^{dx+c} b + \sqrt{a^2+b^2} - a}{-a+\sqrt{a^2+b^2}}\right) x}{b d \sqrt{a^2+b^2}} - \frac{a f \ln\left(\frac{-e^{dx+c} b + \sqrt{a^2+b^2} - a}{-a+\sqrt{a^2+b^2}}\right) c}{b d^2 \sqrt{a^2+b^2}}$$
$$+ \frac{a f \ln\left(\frac{e^{dx+c} b + \sqrt{a^2+b^2} + a}{a+\sqrt{a^2+b^2}}\right) x}{b d \sqrt{a^2+b^2}} + \frac{a f \ln\left(\frac{e^{dx+c} b + \sqrt{a^2+b^2} + a}{a+\sqrt{a^2+b^2}}\right) c}{b d^2 \sqrt{a^2+b^2}} - \frac{a f \operatorname{dilog}\left(\frac{-e^{dx+c} b + \sqrt{a^2+b^2} - a}{-a+\sqrt{a^2+b^2}}\right)}{b d^2 \sqrt{a^2+b^2}}$$
$$+ \frac{a f \operatorname{dilog}\left(\frac{e^{dx+c} b + \sqrt{a^2+b^2} + a}{a+\sqrt{a^2+b^2}}\right)}{b d^2 \sqrt{a^2+b^2}} - \frac{2 a c f \operatorname{arctanh}\left(\frac{2 e^{dx+c} b + 2a}{2\sqrt{a^2+b^2}}\right)}{b d^2 \sqrt{a^2+b^2}}$$

Problem 60: Unable to integrate problem.

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

Optimal(type 4, 509 leaves, 19 steps):

$$-\frac{a(fx+e)^4}{4 b^2 f} + \frac{6 f^2 (fx+e)\cosh(dx+c)}{b d^3} + \frac{(fx+e)^3 \cosh(dx+c)}{b d} - \frac{6 f^3 \sinh(dx+c)}{b d^4} - \frac{3 f (fx+e)^2 \sinh(dx+c)}{b d^2}$$

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

$$- \frac{3 a^2 f (fx+e)^2 \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^2 d^2 \sqrt{a^2+b^2}} - \frac{6 a^2 f^2 (fx+e) \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^2 d^3 \sqrt{a^2+b^2}} + \frac{6 a^2 f^2 (fx+e) \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^2 d^3 \sqrt{a^2+b^2}}$$

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

Result(type 8, 314 leaves):

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

$$+ \frac{d^3 f^3 x^3 + 3 d^3 e f^2 x^2 + 3 d^3 e^2 f x + 3 d^2 f^3 x^2 + d^3 e^3 + 6 d^2 e f^2 x + 3 d^2 e^2 f + 6 d f^3 x + 6 d e f^2 + 6 f^3}{2 b d^4 e^{dx+c}} + \int \frac{2 a^2 \left(x^3 f^3 + 3 e f^2 x^2 + 3 e^2 f x + e^3\right) e^{dx+c}}{b^2 \left(b \left(e^{dx+c}\right)^2 + 2 a e^{dx+c} - b\right)} \, dx$$

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

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

Optimal(type 4, 242 leaves, 13 steps):

$$-\frac{a e x}{b^2} - \frac{a f x^2}{2 b^2} + \frac{(fx+e) \cosh(dx+c)}{b d} - \frac{f \sinh(dx+c)}{b d^2} + \frac{a^2 (fx+e) \ln\left(1+\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^2 d \sqrt{a^2+b^2}} - \frac{a^2 (fx+e) \ln\left(1+\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^2 d \sqrt{a^2+b^2}}$$

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

Result(type 4, 509 leaves):

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

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

$$+\frac{a^2 f \operatorname{dilog}\left(\frac{-e^{dx+c} b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)}{b^2 d^2 \sqrt{a^2+b^2}}-\frac{a^2 f \operatorname{dilog}\left(\frac{e^{dx+c} b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)}{b^2 d^2 \sqrt{a^2+b^2}}+\frac{2 a^2 c f \operatorname{arctanh}\left(\frac{2 e^{dx+c} b+2 a}{2\sqrt{a^2+b^2}}\right)}{b^2 d^2 \sqrt{a^2+b^2}}$$

Problem 63: Unable to integrate problem.

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

Optimal(type 4, 656 leaves, 24 steps):

$$-\frac{3 e f^2 x}{4 b d^2}-\frac{3 f^3 x^2}{8 b d^2}+\frac{a^2 (fx+e)^4}{4 b^3 f}-\frac{(fx+e)^4}{8 b f}-\frac{6 a f^2 (fx+e) \cosh(dx+c)}{b^2 d^3}-\frac{a (fx+e)^3 \cosh(dx+c)}{b^2 d}+\frac{6 a f^3 \sinh(dx+c)}{b^2 d^4}$$

$$+\frac{3 a f (fx+e)^2 \sinh(dx+c)}{b^2 d^2}+\frac{3 f^2 (fx+e) \cosh(dx+c) \sinh(dx+c)}{4 b d^3}+\frac{(fx+e)^3 \cosh(dx+c) \sinh(dx+c)}{2 b d}-\frac{3 f^3 \sinh(dx+c)^2}{8 b d^4}$$

$$-\frac{3 f (fx+e)^2 \sinh(dx+c)^2}{4 b d^2}-\frac{a^3 (fx+e)^3 \ln\left(1+\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^3 d \sqrt{a^2+b^2}}+\frac{a^3 (fx+e)^3 \ln\left(1+\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^3 d \sqrt{a^2+b^2}}$$

$$-\frac{3 a^3 f (fx+e)^2 \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^3 d^2 \sqrt{a^2+b^2}}+\frac{3 a^3 f (fx+e)^2 \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^3 d^2 \sqrt{a^2+b^2}}+\frac{6 a^3 f^2 (fx+e) \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^3 d^3 \sqrt{a^2+b^2}}$$

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

Result(type 8, 587 leaves):

$$\frac{\frac{1}{2} a^2 f^3 x^4-\frac{1}{4} b^2 f^3 x^4+2 a^2 e f^2 x^3-b^2 e f^2 x^3+3 a^2 e^2 f x^2-\frac{3}{2} b^2 e^2 f x^2+2 a^2 e^3 x-b^2 e^3 x}{2 b^3}$$

$$+\frac{\left(4 d^3 f^3 x^3+12 d^3 e f^2 x^2+12 d^3 e^2 f x-6 d^2 f^3 x^2+4 d^3 e^3-12 d^2 e f^2 x-6 d^2 e^2 f+6 d f^3 x+6 d e f^2-3 f^3\right) \left(e^{dx+c}\right)^2}{32 b d^4}$$

$$-\frac{a \left(d^3 f^3 x^3+3 d^3 e f^2 x^2+3 d^3 e^2 f x-3 d^2 f^3 x^2+d^3 e^3-6 d^2 e f^2 x-3 d^2 e^2 f+6 d f^3 x+6 d e f^2-6 f^3\right) e^{dx+c}}{2 d^4 b^2}$$

$$-\frac{a\left(d^3 f^3 x^3+3 d^3 e f^2 x^2+3 d^3 e^2 f x+3 d^2 f^3 x^2+d^3 e^3+6 d^2 e f^2 x+3 d^2 e^2 f+6 d f^3 x+6 d e f^2+6 f^3\right)}{2 d^4 b^2 e^{d x+c}}$$
$$-\frac{4 d^3 f^3 x^3+12 d^3 e f^2 x^2+12 d^3 e^2 f x+6 d^2 f^3 x^2+4 d^3 e^3+12 d^2 e f^2 x+6 d^2 e^2 f+6 d f^3 x+6 d e f^2+3 f^3}{32 b d^4\left(e^{d x+c}\right)^2}+\int-\frac{2 a^3\left(x^3 f^3+3 e f^2 x^2+3 e^2 f x+e^3\right) e^{d x+c}}{\left(b\left(e^{d x+c}\right)^2+2 a e^{d x+c}-b\right) b^3}\, dx$$

Problem 64: Unable to integrate problem.

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

Optimal(type 4, 558 leaves, 22 steps):

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

Result(type 8, 28 leaves):

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

Problem 65: Unable to integrate problem.

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

Optimal(type 4, 398 leaves, 18 steps):

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

Result(type 8, 28 leaves):

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

Problem 67: Unable to integrate problem.

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

Optimal(type 4, 696 leaves, 29 steps):

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

Result(type 8, 281 leaves):

$$-\frac{2\left(x^3 f^3+3 e f^2 x^2+3 e^2 f x+e^3\right)}{d a\left(\left(e^{d x+c}\right)^2-1\right)}+4\left(\int \frac{1}{2 a d\left(\left(e^{d x+c}\right)^2-1\right)\left(b\left(e^{d x+c}\right)^2+2 a e^{d x+c}-b\right)}\left(-2 b d f^3 x^3\left(e^{d x+c}\right)^2-6 b d e f^2 x^2\left(e^{d x+c}\right)^2-6 b d e^2 f x\left(e^{d x+c}\right)^2+3 b f^3 x^2\left(e^{d x+c}\right)^2+6 a f^3 x^2 e^{d x+c}-2 b d e^3\left(e^{d x+c}\right)^2+6 b e f^2 x\left(e^{d x+c}\right)^2+12 a e f^2 x e^{d x+c}+3 b e^2 f\left(e^{d x+c}\right)^2-3 b f^3 x^2+6 a e^2 f e^{d x+c}-6 b e f^2 x-3 b e^2 f\right) d x\right)$$

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

$$\int \frac{(f x+e) \operatorname{csch}(d x+c)^3}{a+b \sinh(d x+c)} d x$$

Optimal(type 4, 386 leaves, 24 steps):

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

Result(type 4, 860 leaves):

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

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

$$+\frac{f\operatorname{dilog}(e^{dx+c})}{2 a d^2}+\frac{f\operatorname{dilog}(1+e^{dx+c})}{2 a d^2}-\frac{b f\ln(e^{dx+c}-1)}{a^2 d^2}-\frac{b f\ln(1+e^{dx+c})}{a^2 d^2}+\frac{2 b f\ln(e^{dx+c})}{a^2 d^2}$$

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

$$\int \frac{(fx+e)^3 \cosh(dx+c)^2}{a+I a\sinh(dx+c)}\, dx$$

Optimal(type 3, 102 leaves, 6 steps):

$$\frac{(fx+e)^4}{4 a f}-\frac{6 I f^2 (fx+e)\cosh(dx+c)}{a d^3}-\frac{I (fx+e)^3\cosh(dx+c)}{a d}+\frac{6 I f^3\sinh(dx+c)}{a d^4}+\frac{3 I f (fx+e)^2\sinh(dx+c)}{a d^2}$$

Result(type 3, 447 leaves):

$$-\frac{1}{d^4 a}\Big(-6 I e d c f^2 ((dx+c)\cosh(dx+c)-\sinh(dx+c))+I f^3 \big((dx+c)^3\cosh(dx+c)-3 (dx+c)^2\sinh(dx+c)+6 (dx+c)\cosh(dx+c)$$
$$-6\sinh(dx+c)\big)-3 I c f^3 \big((dx+c)^2\cosh(dx+c)-2 (dx+c)\sinh(dx+c)+2\cosh(dx+c)\big)-3 I e^2 d^2 c f\cosh(dx+c)+I d^3 e^3\cosh(dx+c)$$
$$+3 I e d c^2 f^2\cosh(dx+c)+3 I e d f^2 \big((dx+c)^2\cosh(dx+c)-2 (dx+c)\sinh(dx+c)+2\cosh(dx+c)\big)+3 I e^2 d^2 f((dx+c)\cosh(dx+c)$$
$$-\sinh(dx+c))+3 I c^2 f^3 ((dx+c)\cosh(dx+c)-\sinh(dx+c))-I c^3 f^3\cosh(dx+c)-\frac{f^3 (dx+c)^4}{4}+c f^3 (dx+c)^3-d e f^2 (dx+c)^3$$
$$-\frac{3 c^2 f^3 (dx+c)^2}{2}+3 c d e f^2 (dx+c)^2-\frac{3 d^2 e^2 f (dx+c)^2}{2}+c^3 f^3 (dx+c)-3 e d c^2 f^2 (dx+c)+3 e^2 d^2 c f (dx+c)-e^3 d^3 (dx+c)\Big)$$

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

$$\int \frac{(fx+e)^2 \operatorname{sech}(dx+c)^3}{a+I a\sinh(dx+c)}\, dx$$

Optimal(type 4, 373 leaves, 17 steps):

$$\frac{3 (fx+e)^2\arctan(e^{dx+c})}{4 a d}-\frac{5 f^2\arctan(\sinh(dx+c))}{6 a d^3}-\frac{I f^2\operatorname{sech}(dx+c)^2}{12 a d^3}+\frac{I f^2\ln(\cosh(dx+c))}{3 a d^3}-\frac{3 I f^2\operatorname{polylog}(3, I e^{dx+c})}{4 a d^3}$$
$$-\frac{I f (fx+e)\tanh(dx+c)}{3 a d^2}+\frac{I (fx+e)^2\operatorname{sech}(dx+c)^4}{4 a d}+\frac{3 f (fx+e)\operatorname{sech}(dx+c)}{4 a d^2}+\frac{3 I f (fx+e)\operatorname{polylog}(2, I e^{dx+c})}{4 a d^2}+\frac{f (fx+e)\operatorname{sech}(dx+c)^3}{6 a d^2}$$
$$-\frac{I f (fx+e)\operatorname{sech}(dx+c)^2\tanh(dx+c)}{6 a d^2}-\frac{3 I f (fx+e)\operatorname{polylog}(2, -I e^{dx+c})}{4 a d^2}-\frac{f^2\operatorname{sech}(dx+c)\tanh(dx+c)}{12 a d^3}$$

$$+\frac{3\,(fx+e)^2\,\mathrm{sech}(dx+c)\,\tanh(dx+c)}{8\,a\,d}+\frac{3\,\mathrm{I}\,f^2\,\mathrm{polylog}(3,-\mathrm{I}\,e^{dx+c})}{4\,a\,d^3}+\frac{(fx+e)^2\,\mathrm{sech}(dx+c)^3\,\tanh(dx+c)}{4\,a\,d}$$

Result(type 4, 1043 leaves):

$$\frac{1}{12\,(e^{dx+c}+\mathrm{I})^2\,(e^{dx+c}-\mathrm{I})^4\,d^3\,a}\Big(18\,d^2\,efx\,e^{dx+c}-4\,f^2\,e^{3\,dx+3\,c}-2\,f^2\,e^{dx+c}+6\,d^2\,e^2\,e^{3\,dx+3\,c}+9\,d^2\,e^2\,e^{5\,dx+5\,c}+9\,d^2\,f^2\,x^2\,e^{dx+c}-2\,d\,f^2\,x\,e^{dx+c}$$
$$+16\,d\,f^2\,x\,e^{3\,dx+3\,c}+16\,d\,e\,f\,e^{3\,dx+3\,c}-8\,\mathrm{I}\,d\,e\,f-8\,\mathrm{I}\,d\,f^2\,x-44\,\mathrm{I}\,d\,e\,f\,e^{2\,dx+2\,c}-36\,\mathrm{I}\,d\,f^2\,x\,e^{4\,dx+4\,c}-36\,\mathrm{I}\,d\,e\,f\,e^{4\,dx+4\,c}+18\,\mathrm{I}\,d^2\,f^2\,x^2\,e^{2\,dx+2\,c}$$
$$-44\,\mathrm{I}\,d\,f^2\,x\,e^{2\,dx+2\,c}+12\,d^2\,efx\,e^{3\,dx+3\,c}+18\,d^2\,efx\,e^{5\,dx+5\,c}-18\,\mathrm{I}\,d^2\,f^2\,x^2\,e^{4\,dx+4\,c}+9\,d^2\,e^2\,e^{dx+c}-18\,\mathrm{I}\,d^2\,e^2\,e^{4\,dx+4\,c}+18\,\mathrm{I}\,d^2\,e^2\,e^{2\,dx+2\,c}$$
$$+9\,d^2\,f^2\,x^2\,e^{5\,dx+5\,c}+6\,d^2\,f^2\,x^2\,e^{3\,dx+3\,c}+18\,d\,f^2\,x\,e^{5\,dx+5\,c}+18\,d\,e\,f\,e^{5\,dx+5\,c}-2\,f^2\,e^{5\,dx+5\,c}+36\,\mathrm{I}\,d^2\,efx\,e^{2\,dx+2\,c}-36\,\mathrm{I}\,d^2\,efx\,e^{4\,dx+4\,c}-2\,d\,e\,f\,e^{dx+c}\Big)$$
$$-\frac{2\,\mathrm{I}\,f^2\ln(e^{dx+c})}{3\,a\,d^3}-\frac{3\,\mathrm{I}\,f^2\,\mathrm{polylog}(3,\mathrm{I}\,e^{dx+c})}{4\,a\,d^3}-\frac{3\,\mathrm{I}\,ef\,\mathrm{polylog}(2,-\mathrm{I}\,e^{dx+c})}{4\,a\,d^2}+\frac{3\,\mathrm{I}\,\mathrm{polylog}(2,\mathrm{I}\,e^{dx+c})\,f^2\,x}{4\,a\,d^2}-\frac{\mathrm{I}\,f^2\ln(e^{dx+c}+\mathrm{I})}{2\,a\,d^3}$$
$$+\frac{3\,\mathrm{I}\ln(1-\mathrm{I}\,e^{dx+c})\,efx}{4\,a\,d}+\frac{7\,\mathrm{I}\,f^2\ln(e^{dx+c}-\mathrm{I})}{6\,a\,d^3}+\frac{3\,\mathrm{I}\,ef\,\mathrm{polylog}(2,\mathrm{I}\,e^{dx+c})}{4\,a\,d^2}+\frac{3\,\mathrm{I}\,f^2\,\mathrm{polylog}(3,-\mathrm{I}\,e^{dx+c})}{4\,a\,d^3}+\frac{3\,\mathrm{I}\ln(1-\mathrm{I}\,e^{dx+c})\,cef}{4\,a\,d^2}$$
$$+\frac{3\,\mathrm{I}\ln(1-\mathrm{I}\,e^{dx+c})\,f^2\,x^2}{8\,a\,d}-\frac{3\,\mathrm{I}\ln(1-\mathrm{I}\,e^{dx+c})\,c^2\,f^2}{8\,a\,d^3}+\frac{3\,\mathrm{I}\,e^2\ln(e^{dx+c}+\mathrm{I})}{8\,a\,d}-\frac{3\,\mathrm{I}\ln(1+\mathrm{I}\,e^{dx+c})\,efx}{4\,a\,d}-\frac{3\,\mathrm{I}\,cfe\ln(e^{dx+c}+\mathrm{I})}{4\,a\,d^2}$$
$$-\frac{3\,\mathrm{I}\,\mathrm{polylog}(2,-\mathrm{I}\,e^{dx+c})\,f^2\,x}{4\,a\,d^2}-\frac{3\,\mathrm{I}\ln(1+\mathrm{I}\,e^{dx+c})\,cef}{4\,a\,d^2}+\frac{3\,\mathrm{I}\ln(1+\mathrm{I}\,e^{dx+c})\,c^2\,f^2}{8\,a\,d^3}-\frac{3\,\mathrm{I}\ln(1+\mathrm{I}\,e^{dx+c})\,f^2\,x^2}{8\,a\,d}+\frac{3\,\mathrm{I}\,cfe\ln(e^{dx+c}-\mathrm{I})}{4\,a\,d^2}$$
$$+\frac{3\,\mathrm{I}\,c^2\,f^2\ln(e^{dx+c}+\mathrm{I})}{8\,a\,d^3}-\frac{3\,\mathrm{I}\,e^2\ln(e^{dx+c}-\mathrm{I})}{8\,a\,d}-\frac{3\,\mathrm{I}\,c^2\,f^2\ln(e^{dx+c}-\mathrm{I})}{8\,a\,d^3}$$

Problem 78: Unable to integrate problem.

$$\int\frac{(fx+e)^3\cosh(dx+c)}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 4, 330 leaves, 11 steps):

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

Result(type 8, 157 leaves):

$$\frac{\frac{1}{4}x^4f^3+ef^2x^3+\frac{3}{2}e^2fx^2+e^3x}{b}+\int -\frac{2\left(af^3x^3e^{dx+c}+3aef^2x^2e^{dx+c}-bf^3x^3+3ae^2fxe^{dx+c}-3bef^2x^2+ae^3e^{dx+c}-3be^2fx-be^3\right)}{b\left(b\left(e^{dx+c}\right)^2+2ae^{dx+c}-b\right)}\,dx$$

Problem 79: Unable to integrate problem.

$$\int \frac{(fx+e)^2\cosh(dx+c)^2}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 4, 357 leaves, 15 steps):

$$-\frac{a(fx+e)^3}{3b^2f}+\frac{2f^2\cosh(dx+c)}{bd^3}+\frac{(fx+e)^2\cosh(dx+c)}{bd}-\frac{2f(fx+e)\sinh(dx+c)}{bd^2}+\frac{(fx+e)^2\ln\left(1+\frac{be^{dx+c}}{a-\sqrt{a^2+b^2}}\right)\sqrt{a^2+b^2}}{b^2d}$$
$$-\frac{(fx+e)^2\ln\left(1+\frac{be^{dx+c}}{a+\sqrt{a^2+b^2}}\right)\sqrt{a^2+b^2}}{b^2d}+\frac{2f(fx+e)\operatorname{polylog}\left(2,-\frac{be^{dx+c}}{a-\sqrt{a^2+b^2}}\right)\sqrt{a^2+b^2}}{b^2d^2}$$
$$-\frac{2f(fx+e)\operatorname{polylog}\left(2,-\frac{be^{dx+c}}{a+\sqrt{a^2+b^2}}\right)\sqrt{a^2+b^2}}{b^2d^2}-\frac{2f^2\operatorname{polylog}\left(3,-\frac{be^{dx+c}}{a-\sqrt{a^2+b^2}}\right)\sqrt{a^2+b^2}}{b^2d^3}+\frac{2f^2\operatorname{polylog}\left(3,-\frac{be^{dx+c}}{a+\sqrt{a^2+b^2}}\right)\sqrt{a^2+b^2}}{b^2d^3}$$

Result(type 8, 232 leaves):

$$-\frac{a\left(\frac{1}{3}x^3f^2+efx^2+e^2x\right)}{b^2}+\frac{\left(d^2f^2x^2+2d^2efx+d^2e^2-2df^2x-2efd+2f^2\right)e^{dx+c}}{2d^3b}+\frac{d^2f^2x^2+2d^2efx+d^2e^2+2df^2x+2efd+2f^2}{2d^3be^{dx+c}}+$$
$$\int \frac{2\left(a^2f^2x^2+b^2f^2x^2+2a^2efx+2b^2efx+a^2e^2+b^2e^2\right)e^{dx+c}}{\left(b\left(e^{dx+c}\right)^2+2ae^{dx+c}-b\right)b^2}\,dx$$

Problem 80: Unable to integrate problem.

$$\int \frac{(fx+e)^3\cosh(dx+c)^3}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 4, 604 leaves, 21 steps):

$$\frac{3f^3x}{8bd^3}+\frac{(fx+e)^3}{4bd}-\frac{\left(a^2+b^2\right)(fx+e)^4}{4b^3f}+\frac{6af^3\cosh(dx+c)}{b^2d^4}+\frac{3af(fx+e)^2\cosh(dx+c)}{b^2d^2}+\frac{\left(a^2+b^2\right)(fx+e)^3\ln\left(1+\frac{be^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^3d}$$
$$+\frac{\left(a^2+b^2\right)(fx+e)^3\ln\left(1+\frac{be^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^3d}+\frac{3\left(a^2+b^2\right)f(fx+e)^2\operatorname{polylog}\left(2,-\frac{be^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2}$$

$$+\frac{3\left(a^2+b^2\right)f(fx+e)^2\operatorname{polylog}\left(2,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^3d^2}-\frac{6\left(a^2+b^2\right)f^2(fx+e)\operatorname{polylog}\left(3,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^3}$$

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

$$-\frac{6af^2(fx+e)\sinh(dx+c)}{b^2d^3}-\frac{a(fx+e)^3\sinh(dx+c)}{b^2d}-\frac{3f^3\cosh(dx+c)\sinh(dx+c)}{8bd^4}-\frac{3f(fx+e)^2\cosh(dx+c)\sinh(dx+c)}{4bd^2}$$

$$+\frac{3f^2(fx+e)\sinh(dx+c)^2}{4bd^3}+\frac{(fx+e)^3\sinh(dx+c)^2}{2bd}$$

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Result(type 8, 763 leaves):
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$$\frac{\frac{1}{4}a^2f^3x^4+\frac{1}{4}b^2f^3x^4+a^2ef^2x^3+b^2ef^2x^3+\frac{3}{2}a^2e^2fx^2+\frac{3}{2}b^2e^2fx^2+a^2e^3x+b^2e^3x}{b^3}$$

$$+\frac{\left(4d^3f^3x^3+12d^3ef^2x^2+12d^3e^2fx-6d^2f^3x^2+4e^3d^3-12d^2ef^2x-6d^2e^2f+6df^3x+6def^2-3f^3\right)\left(e^{dx+c}\right)^2}{32bd^4}$$

$$-\frac{a\left(d^3f^3x^3+3d^3ef^2x^2+3d^3e^2fx-3d^2f^3x^2+e^3d^3-6d^2ef^2x-3d^2e^2f+6df^3x+6def^2-6f^3\right)e^{dx+c}}{2d^4b^2}$$

$$+\frac{a\left(d^3f^3x^3+3d^3ef^2x^2+3d^3e^2fx+3d^2f^3x^2+e^3d^3+6d^2ef^2x+3d^2e^2f+6df^3x+6def^2+6f^3\right)}{2d^4b^2e^{dx+c}}$$

$$+\frac{4d^3f^3x^3+12d^3ef^2x^2+12d^3e^2fx+6d^2f^3x^2+4e^3d^3+12d^2ef^2x+6d^2e^2f+6df^3x+6def^2+3f^3}{32bd^4\left(e^{dx+c}\right)^2}+\int$$

$$-\frac{1}{b^3\left(b\left(e^{dx+c}\right)^2+2a\,e^{dx+c}-b\right)}\left(2\left(a^3f^3x^3e^{dx+c}+ab^2f^3x^3e^{dx+c}+3a^3ef^2x^2e^{dx+c}-a^2bf^3x^3+3ab^2ef^2x^2e^{dx+c}-b^3f^3x^3+3a^3e^2fx\,e^{dx+c}\right.\right.$$
$$\left.\left.-3a^2bef^2x^2+3ab^2e^2fx\,e^{dx+c}-3b^3ef^2x^2+a^3e^3e^{dx+c}-3a^2be^2fx+ab^2e^3e^{dx+c}-3b^3e^2fx-a^2be^3-b^3e^3\right)\right)dx$$

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Problem 81: Result more than twice size of optimal antiderivative.
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$$\int\frac{\cosh(dx+c)^3}{a+b\sinh(dx+c)}\,dx$$

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Optimal(type 3, 57 leaves, 3 steps):
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$$\frac{\left(a^2+b^2\right)\ln(a+b\sinh(dx+c))}{b^3d}-\frac{a\sinh(dx+c)}{b^2d}+\frac{\sinh(dx+c)^2}{2bd}$$

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Result(type 3, 290 leaves):
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$$\frac{1}{2\,d\,b\left(\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)-1\right)^2}+\frac{1}{2\,d\,b\left(\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)-1\right)}+\frac{a}{d\,b^2\left(\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)-1\right)}-\frac{\ln\left(\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)-1\right)a^2}{d\,b^3}$$
$$-\frac{\ln\left(\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)-1\right)}{d\,b}+\frac{1}{2\,d\,b\left(\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)+1\right)^2}-\frac{1}{2\,d\,b\left(\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)+1\right)}+\frac{a}{d\,b^2\left(\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)+1\right)}$$
$$-\frac{\ln\left(\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)+1\right)a^2}{d\,b^3}-\frac{\ln\left(\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)+1\right)}{d\,b}+\frac{\ln\left(\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)^2a-2\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)b-a\right)a^2}{d\,b^3}$$
$$+\frac{\ln\left(\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)^2a-2\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)b-a\right)}{d\,b}$$

Problem 82: Unable to integrate problem.

$$\int\frac{(fx+e)^3\operatorname{sech}(d\,x+c)^2}{a+b\sinh(d\,x+c)}\,\mathrm{d}x$$

Optimal(type 4, 725 leaves, 29 steps):

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

$$+\frac{b\,(fx+e)^3\,\mathrm{sech}(dx+c)}{(a^2+b^2)\,d}+\frac{a\,(fx+e)^3\tanh(dx+c)}{(a^2+b^2)\,d}$$

Result(type 8, 491 leaves):

$$-\frac{2\,(f^3x^3+3\,ef^2x^2+3\,e^2fx+e^3)\,(-\mathrm{e}^{dx+c}b+a)}{d\,(a^2+b^2)\,\left((\mathrm{e}^{dx+c})^2+1\right)}+4\left(\int\frac{1}{2\,d\,(a^2+b^2)\,\left((\mathrm{e}^{dx+c})^2+1\right)\left(b\,(\mathrm{e}^{dx+c})^2+2\,a\,\mathrm{e}^{dx+c}-b\right)}\left(b^2df^3x^3\,(\mathrm{e}^{dx+c})^3\right.\right.$$
$$+3\,b^2def^2x^2\,(\mathrm{e}^{dx+c})^3+3\,b^2de^2fx\,(\mathrm{e}^{dx+c})^3+b^2df^3x^3\,\mathrm{e}^{dx+c}-3\,b^2f^3x^2\,(\mathrm{e}^{dx+c})^3-3\,abf^3x^2\,(\mathrm{e}^{dx+c})^2+b^2de^3\,(\mathrm{e}^{dx+c})^3+3\,b^2def^2x^2\,\mathrm{e}^{dx+c}$$
$$-6\,b^2ef^2x\,(\mathrm{e}^{dx+c})^3+6\,a^2f^3x^2\,\mathrm{e}^{dx+c}-6\,abef^2x\,(\mathrm{e}^{dx+c})^2+3\,b^2de^2fx\,\mathrm{e}^{dx+c}-3\,b^2e^2f(\mathrm{e}^{dx+c})^3+3\,b^2f^3x^2\,\mathrm{e}^{dx+c}+12\,a^2ef^2x\,\mathrm{e}^{dx+c}$$
$$\left.\left.-3\,abe^2f(\mathrm{e}^{dx+c})^2-3\,abf^3x^2+b^2de^3\,\mathrm{e}^{dx+c}+6\,b^2ef^2x\,\mathrm{e}^{dx+c}+6\,a^2e^2f\mathrm{e}^{dx+c}-6\,abef^2x+3\,b^2e^2f\mathrm{e}^{dx+c}-3\,abe^2f\right)\,\mathrm{d}x\right)$$

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

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

Optimal(type 3, 115 leaves, 7 steps):

$$\frac{a\,(a^2+3\,b^2)\arctan(\sinh(dx+c))}{2\,(a^2+b^2)^2\,d}-\frac{b^3\ln(\cosh(dx+c))}{(a^2+b^2)^2\,d}+\frac{b^3\ln(a+b\sinh(dx+c))}{(a^2+b^2)^2\,d}+\frac{\mathrm{sech}(dx+c)^2\,(b+a\sinh(dx+c))}{2\,(a^2+b^2)\,d}$$

Result(type 3, 467 leaves):

$$-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^3a^3}{d\,(a^4+2\,b^2a^2+b^4)\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^3b^2a}{d\,(a^4+2\,b^2a^2+b^4)\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}-\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a^2b}{d\,(a^4+2\,b^2a^2+b^4)\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}$$
$$-\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2b^3}{d\,(a^4+2\,b^2a^2+b^4)\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}+\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a^3}{d\,(a^4+2\,b^2a^2+b^4)\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}$$
$$+\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b^2a}{d\,(a^4+2\,b^2a^2+b^4)\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}-\frac{b^3\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)}{d\,(a^4+2\,b^2a^2+b^4)}+\frac{\arctan\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a^3}{d\,(a^4+2\,b^2a^2+b^4)}$$
$$+\frac{3\arctan\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)b^2a}{d\,(a^4+2\,b^2a^2+b^4)}+\frac{b^3\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{d\,(a^4+2\,b^2a^2+b^4)}$$

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

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

Optimal(type 3, 106 leaves, 6 steps):

$$-\frac{a f \operatorname{arctanh}\left(\frac{b-a \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)}{\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2} d^2}+\frac{-f x-e}{2 b d\,(a+b \sinh(d x+c))^2}-\frac{f \cosh(d x+c)}{2\left(a^2+b^2\right) d^2\,(a+b \sinh(d x+c))}$$

Result(type 3, 307 leaves):

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

Problem 86: Result more than twice size of optimal antiderivative.

$$\int \frac{(f x+e) \cosh(d x+c)}{(a+b \sinh(d x+c))^3}\, \mathrm{d}x$$

Optimal(type 3, 106 leaves, 6 steps):

$$-\frac{a f \operatorname{arctanh}\left(\frac{b-a \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)}{\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2} d^2}+\frac{-f x-e}{2 b d\,(a+b \sinh(d x+c))^2}-\frac{f \cosh(d x+c)}{2\left(a^2+b^2\right) d^2\,(a+b \sinh(d x+c))}$$

Result(type 3, 307 leaves):

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

Problem 87: Unable to integrate problem.

$$\int \frac{(f x+e)^3 \cosh(d x+c)}{(a+b \sinh(d x+c))^3}\, \mathrm{d}x$$

Optimal(type 4, 579 leaves, 19 steps):

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

$$-\frac{3af(fx+e)^2\ln\left(1+\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{2b(a^2+b^2)^{3/2}d^2}+\frac{3f^3\operatorname{polylog}\left(2,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b(a^2+b^2)d^4}+\frac{3af^2(fx+e)\operatorname{polylog}\left(2,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b(a^2+b^2)^{3/2}d^3}$$

$$+\frac{3f^3\operatorname{polylog}\left(2,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b(a^2+b^2)d^4}-\frac{3af^2(fx+e)\operatorname{polylog}\left(2,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b(a^2+b^2)^{3/2}d^3}-\frac{3af^3\operatorname{polylog}\left(3,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b(a^2+b^2)^{3/2}d^4}$$

$$+\frac{3af^3\operatorname{polylog}\left(3,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b(a^2+b^2)^{3/2}d^4}-\frac{(fx+e)^3}{2bd(a+b\sinh(dx+c))^2}-\frac{3f(fx+e)^2\cosh(dx+c)}{2(a^2+b^2)d^2(a+b\sinh(dx+c))}$$

Result(type 8, 554 leaves):

$$-\frac{1}{b\,d^2\left(b\left(e^{dx+c}\right)^2+2a\,e^{dx+c}-b\right)^2(a^2+b^2)}\Big(2a^2df^3x^3\left(e^{dx+c}\right)^2+2b^2df^3x^3\left(e^{dx+c}\right)^2+6a^2def^2x^2\left(e^{dx+c}\right)^2-3abf^3x^2\left(e^{dx+c}\right)^3$$
$$+6b^2def^2x^2\left(e^{dx+c}\right)^2+6a^2de^2fx\left(e^{dx+c}\right)^2-6a^2f^3x^2\left(e^{dx+c}\right)^2-6abef^2x\left(e^{dx+c}\right)^3+6b^2de^2fx\left(e^{dx+c}\right)^2+3b^2f^3x^2\left(e^{dx+c}\right)^2$$
$$+2a^2de^3\left(e^{dx+c}\right)^2-12a^2ef^2x\left(e^{dx+c}\right)^2-3abe^2f\left(e^{dx+c}\right)^3+9abf^3x^2e^{dx+c}+2b^2de^3\left(e^{dx+c}\right)^2+6b^2ef^2x\left(e^{dx+c}\right)^2-6a^2e^2f\left(e^{dx+c}\right)^2$$
$$+18abef^2x\,e^{dx+c}+3b^2e^2f\left(e^{dx+c}\right)^2-3b^2f^3x^2+9abe^2fe^{dx+c}-6b^2ef^2x-3b^2e^2f\Big)+$$
$$\int\frac{3f\left(adf^2x^2e^{dx+c}+2adefx\,e^{dx+c}+ade^2e^{dx+c}-2af^2x\,e^{dx+c}-2aefe^{dx+c}+2bf^2x+2bef\right)}{b\,d^2(a^2+b^2)\left(b\left(e^{dx+c}\right)^2+2a\,e^{dx+c}-b\right)}\,dx$$

Problem 88: Unable to integrate problem.

$$\int\frac{(fx+e)^3\cosh(dx+c)\sinh(dx+c)}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 4, 422 leaves, 16 steps):

$$\frac{a(fx+e)^4}{4b^2f}-\frac{6f^3\cosh(dx+c)}{bd^4}-\frac{3f(fx+e)^2\cosh(dx+c)}{bd^2}-\frac{a(fx+e)^3\ln\left(1+\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^2d}-\frac{a(fx+e)^3\ln\left(1+\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^2d}$$

$$-\frac{3af(fx+e)^2\operatorname{polylog}\left(2,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2}-\frac{3af(fx+e)^2\operatorname{polylog}\left(2,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^2}+\frac{6af^2(fx+e)\operatorname{polylog}\left(3,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^3}$$

$$+\frac{6af^2(fx+e)\operatorname{polylog}\left(3,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^3}-\frac{6af^3\operatorname{polylog}\left(4,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^4}-\frac{6af^3\operatorname{polylog}\left(4,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^4}$$

$$+\frac{6f^2(fx+e)\sinh(dx+c)}{bd^3}+\frac{(fx+e)^3\sinh(dx+c)}{bd}$$

Result(type 8, 368 leaves):

$$-\frac{a\left(\frac{1}{4}x^4f^3+ef^2x^3+\frac{3}{2}e^2fx^2+e^3x\right)}{b^2}+\frac{\left(d^3f^3x^3+3d^3ef^2x^2+3d^3e^2fx-3d^2f^3x^2+e^3d^3-6d^2ef^2x-3d^2e^2f+6df^3x+6def^2-6f^3\right)e^{dx+c}}{2bd^4}$$
$$-\frac{d^3f^3x^3+3d^3ef^2x^2+3d^3e^2fx+3d^2f^3x^2+e^3d^3+6d^2ef^2x+3d^2e^2f+6df^3x+6def^2+6f^3}{2bd^4e^{dx+c}}+$$
$$\int\frac{2a\left(af^3x^3e^{dx+c}+3aef^2x^2e^{dx+c}-bf^3x^3+3ae^2fxe^{dx+c}-3bef^2x^2+ae^3e^{dx+c}-3be^2fx-be^3\right)}{\left(b\left(e^{dx+c}\right)^2+2ae^{dx+c}-b\right)b^2}\,dx$$

Problem 89: Result more than twice size of optimal antiderivative.

$$\int\frac{(fx+e)\cosh(dx+c)\sinh(dx+c)}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 4, 198 leaves, 10 steps):

$$\frac{a(fx+e)^2}{2b^2f}-\frac{f\cosh(dx+c)}{bd^2}-\frac{a(fx+e)\ln\left(1+\frac{be^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^2d}-\frac{a(fx+e)\ln\left(1+\frac{be^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^2d}-\frac{af\,\mathrm{polylog}\left(2,-\frac{be^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2}$$
$$-\frac{af\,\mathrm{polylog}\left(2,-\frac{be^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^2}+\frac{(fx+e)\sinh(dx+c)}{bd}$$

Result(type 4, 482 leaves):

$$\frac{afx^2}{2b^2}-\frac{aex}{b^2}+\frac{(dfx+de-f)e^{dx+c}}{2bd^2}-\frac{(dfx+de+f)e^{-dx-c}}{2bd^2}-\frac{2afc\ln\left(e^{dx+c}\right)}{b^2d^2}+\frac{afc\ln\left(be^{2dx+2c}+2ae^{dx+c}-b\right)}{b^2d^2}+\frac{2ae\ln\left(e^{dx+c}\right)}{b^2d}$$
$$-\frac{ae\ln\left(be^{2dx+2c}+2ae^{dx+c}-b\right)}{b^2d}+\frac{2afcx}{b^2d}+\frac{afc^2}{b^2d^2}-\frac{af\ln\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)x}{b^2d}-\frac{af\ln\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)c}{b^2d^2}$$
$$-\frac{af\ln\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)x}{b^2d}-\frac{af\ln\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)c}{b^2d^2}-\frac{af\,\mathrm{dilog}\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)}{b^2d^2}$$
$$-\frac{af\,\mathrm{dilog}\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)}{b^2d^2}$$

Problem 91: Unable to integrate problem.

$$\int \frac{(fx+e)^2 \cosh(dx+c)^2 \sinh(dx+c)}{a+b\sinh(dx+c)}\, dx$$

Optimal(type 4, 468 leaves, 20 steps):

$$\frac{f^2 x}{4 b d^2} + \frac{a^2 (fx+e)^3}{3 b^3 f} + \frac{(fx+e)^3}{6 b f} - \frac{2 a f^2 \cosh(dx+c)}{b^2 d^3} - \frac{a (fx+e)^2 \cosh(dx+c)}{b^2 d} - \frac{f (fx+e) \cosh(dx+c)^2}{2 b d^2} + \frac{2 a f (fx+e) \sinh(dx+c)}{b^2 d^2} + \frac{f^2 \cosh(dx+c) \sinh(dx+c)}{4 b d^3} + \frac{(fx+e)^2 \cosh(dx+c) \sinh(dx+c)}{2 b d} - \frac{a (fx+e)^2 \ln\left(1 + \frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right) \sqrt{a^2+b^2}}{b^3 d} + \frac{a (fx+e)^2 \ln\left(1 + \frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right) \sqrt{a^2+b^2}}{b^3 d} - \frac{2 a f (fx+e) \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right) \sqrt{a^2+b^2}}{b^3 d^2} + \frac{2 a f (fx+e) \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right) \sqrt{a^2+b^2}}{b^3 d^2} + \frac{2 a f^2 \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right) \sqrt{a^2+b^2}}{b^3 d^3} - \frac{2 a f^2 \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right) \sqrt{a^2+b^2}}{b^3 d^3}$$

Result(type 8, 391 leaves):

$$\frac{\frac{2}{3} a^2 f^2 x^3 + \frac{1}{3} b^2 f^2 x^3 + 2 a^2 e f x^2 + b^2 e f x^2 + 2 a^2 e^2 x + b^2 e^2 x}{2 b^3} + \frac{(2 d^2 f^2 x^2 + 4 d^2 e f x + 2 d^2 e^2 - 2 d f^2 x - 2 e f d + f^2) (e^{dx+c})^2}{16 b d^3} - \frac{a (d^2 f^2 x^2 + 2 d^2 e f x + d^2 e^2 - 2 d f^2 x - 2 e f d + 2 f^2) e^{dx+c}}{2 b^2 d^3} - \frac{a (d^2 f^2 x^2 + 2 d^2 e f x + d^2 e^2 + 2 d f^2 x + 2 e f d + 2 f^2)}{2 b^2 d^3 e^{dx+c}} - \frac{2 d^2 f^2 x^2 + 4 d^2 e f x + 2 d^2 e^2 + 2 d f^2 x + 2 e f d + f^2}{16 b d^3 (e^{dx+c})^2} + \int -\frac{2 a (a^2 f^2 x^2 + b^2 f^2 x^2 + 2 a^2 e f x + 2 b^2 e f x + a^2 e^2 + b^2 e^2) e^{dx+c}}{(b (e^{dx+c})^2 + 2 a e^{dx+c} - b) b^3}\, dx$$

Problem 92: Unable to integrate problem.

$$\int \frac{(fx+e)^3 \cosh(dx+c)^3 \sinh(dx+c)}{a+b\sinh(dx+c)}\, dx$$

Optimal(type 4, 812 leaves, 30 steps):

$$-\frac{3 a (a^2+b^2) f (fx+e)^2 \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^4 d^2} - \frac{3 a (a^2+b^2) f (fx+e)^2 \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^4 d^2}$$

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

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

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

$$-\frac{40 f^{3} \cosh\left(d x+c\right)}{9 b d^{4}}-\frac{a \left(f x+e\right)^{3}}{4 b^{2} d}-\frac{2 f^{3} \cosh\left(d x+c\right)^{3}}{27 b d^{4}}+\frac{2 \left(f x+e\right)^{3} \sinh\left(d x+c\right)}{3 b d}+\frac{a \left(a^{2}+b^{2}\right) \left(f x+e\right)^{4}}{4 b^{4} f}-\frac{6 a^{2} f^{3} \cosh\left(d x+c\right)}{b^{3} d^{4}}$$

$$-\frac{f \left(f x+e\right)^{2} \cosh\left(d x+c\right)^{3}}{3 b d^{2}}+\frac{\left(f x+e\right)^{3} \cosh\left(d x+c\right)^{2} \sinh\left(d x+c\right)}{3 b d}-\frac{a \left(f x+e\right)^{3} \sinh\left(d x+c\right)^{2}}{2 b^{2} d}-\frac{2 f \left(f x+e\right)^{2} \cosh\left(d x+c\right)}{b d^{2}}$$

$$+\frac{40 f^{2} \left(f x+e\right) \sinh\left(d x+c\right)}{9 b d^{3}}-\frac{3 a f^{3} x}{8 b^{2} d^{3}}-\frac{3 a^{2} f \left(f x+e\right)^{2} \cosh\left(d x+c\right)}{b^{3} d^{2}}+\frac{6 a^{2} f^{2} \left(f x+e\right) \sinh\left(d x+c\right)}{b^{3} d^{3}}+\frac{3 a f^{3} \cosh\left(d x+c\right) \sinh\left(d x+c\right)}{8 b^{2} d^{4}}$$

$$+\frac{2 f^{2} \left(f x+e\right) \cosh\left(d x+c\right)^{2} \sinh\left(d x+c\right)}{9 b d^{3}}-\frac{3 a f^{2} \left(f x+e\right) \sinh\left(d x+c\right)^{2}}{4 b^{2} d^{3}}$$

Result(type 8, 1143 leaves):

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

$$+\frac{\left(9 d^{3} f^{3} x^{3}+27 d^{3} e f^{2} x^{2}+27 d^{3} e^{2} f x-9 d^{2} f^{3} x^{2}+9 e^{3} d^{3}-18 d^{2} e f^{2} x-9 d^{2} e^{2} f+6 d f^{3} x+6 d e f^{2}-2 f^{3}\right) \left(\mathrm{e}^{d x+c}\right)^{3}}{216 b d^{4}}$$

$$-\frac{a \left(4 d^{3} f^{3} x^{3}+12 d^{3} e f^{2} x^{2}+12 d^{3} e^{2} f x-6 d^{2} f^{3} x^{2}+4 e^{3} d^{3}-12 d^{2} e f^{2} x-6 d^{2} e^{2} f+6 d f^{3} x+6 d e f^{2}-3 f^{3}\right) \left(\mathrm{e}^{d x+c}\right)^{2}}{32 b^{2} d^{4}}+\frac{1}{8 b^{3} d^{4}} \Big(\big(4 a^{2} d^{3} f^{3} x^{3}$$

$$+3 b^{2} d^{3} f^{3} x^{3}+12 a^{2} d^{3} e f^{2} x^{2}+9 b^{2} d^{3} e f^{2} x^{2}+12 a^{2} d^{3} e^{2} f x-12 a^{2} d^{2} f^{3} x^{2}+9 b^{2} d^{3} e^{2} f x-9 b^{2} d^{2} f^{3} x^{2}+4 a^{2} d^{3} e^{3}-24 a^{2} d^{2} e f^{2} x+3 b^{2} d^{3} e^{3}$$

$$-18 b^{2} d^{2} e f^{2} x-12 a^{2} d^{2} e^{2} f+24 a^{2} d f^{3} x-9 b^{2} d^{2} e^{2} f+18 b^{2} d f^{3} x+24 a^{2} d e f^{2}+18 b^{2} d e f^{2}-24 a^{2} f^{3}-18 b^{2} f^{3}\big) \mathrm{e}^{d x+c}\Big)$$

$$-\frac{\left(4 a^{2}+3 b^{2}\right) \left(d^{3} f^{3} x^{3}+3 d^{3} e f^{2} x^{2}+3 d^{3} e^{2} f x+3 d^{2} f^{3} x^{2}+e^{3} d^{3}+6 d^{2} e f^{2} x+3 d^{2} e^{2} f+6 d f^{3} x+6 d e f^{2}+6 f^{3}\right)}{8 b^{3} d^{4} \mathrm{e}^{d x+c}}$$

$$-\frac{a \left(4 d^{3} f^{3} x^{3}+12 d^{3} e f^{2} x^{2}+12 d^{3} e^{2} f x+6 d^{2} f^{3} x^{2}+4 e^{3} d^{3}+12 d^{2} e f^{2} x+6 d^{2} e^{2} f+6 d f^{3} x+6 d e f^{2}+3 f^{3}\right)}{32 b^{2} d^{4} \left(\mathrm{e}^{d x+c}\right)^{2}}$$

$$-\frac{9 d^{3} f^{3} x^{3}+27 d^{3} e f^{2} x^{2}+27 d^{3} e^{2} f x+9 d^{2} f^{3} x^{2}+9 e^{3} d^{3}+18 d^{2} e f^{2} x+9 d^{2} e^{2} f+6 d f^{3} x+6 d e f^{2}+2 f^{3}}{216 b d^{4} \left(\mathrm{e}^{d x+c}\right)^{3}}+$$

$$\int \frac{1}{\left(b\left(e^{dx+c}\right)^2+2a\,e^{dx+c}-b\right)b^4}\left(2a\left(a^3f^3x^3e^{dx+c}+ab^2f^3x^3e^{dx+c}+3a^3ef^2x^2e^{dx+c}-a^2bf^3x^3+3ab^2ef^2x^2e^{dx+c}-b^3f^3x^3+3a^3e^2fx\,e^{dx+c}-3a^2bef^2x^2+3ab^2e^2fx\,e^{dx+c}-3b^3ef^2x^2+a^3e^3e^{dx+c}-3a^2be^2fx+ab^2e^3e^{dx+c}-3b^3e^2fx-a^2be^3-b^3e^3\right)\right)dx$$

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

$$\int \frac{(fx+e)\cosh(dx+c)^3\sinh(dx+c)}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 4, 372 leaves, 17 steps):

$$-\frac{afx}{4b^2d}+\frac{a\left(a^2+b^2\right)(fx+e)^2}{2b^4f}-\frac{a^2f\cosh(dx+c)}{b^3d^2}-\frac{2f\cosh(dx+c)}{3bd^2}-\frac{f\cosh(dx+c)^3}{9bd^2}-\frac{a\left(a^2+b^2\right)(fx+e)\ln\left(1+\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^4d}$$
$$-\frac{a\left(a^2+b^2\right)(fx+e)\ln\left(1+\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^4d}-\frac{a\left(a^2+b^2\right)f\,\mathrm{polylog}\left(2,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^4d^2}-\frac{a\left(a^2+b^2\right)f\,\mathrm{polylog}\left(2,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^4d^2}$$
$$+\frac{a^2(fx+e)\sinh(dx+c)}{b^3d}+\frac{2(fx+e)\sinh(dx+c)}{3bd}+\frac{af\cosh(dx+c)\sinh(dx+c)}{4b^2d^2}+\frac{(fx+e)\cosh(dx+c)^2\sinh(dx+c)}{3bd}$$
$$-\frac{a(fx+e)\sinh(dx+c)^2}{2b^2d}$$

Result(type 4, 1101 leaves):

$$-\frac{a^3e\ln\left(b\,e^{2dx+2c}+2a\,e^{dx+c}-b\right)}{b^4d}-\frac{a^3f\,\mathrm{dilog}\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)}{b^4d^2}-\frac{a^3f\,\mathrm{dilog}\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)}{b^4d^2}+\frac{2a^3e\ln\left(e^{dx+c}\right)}{b^4d}+\frac{a^3fc^2}{b^4d^2}$$
$$-\frac{a(2dfx+2de-f)\,e^{2dx+2c}}{16b^2d^2}-\frac{\left(4a^2+3b^2\right)(dfx+de+f)\,e^{-dx-c}}{8b^3d^2}-\frac{a(2dfx+2de+f)\,e^{-2dx-2c}}{16b^2d^2}-\frac{ae\ln\left(b\,e^{2dx+2c}+2a\,e^{dx+c}-b\right)}{b^2d}$$
$$-\frac{af\,\mathrm{dilog}\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)}{b^2d^2}-\frac{af\,\mathrm{dilog}\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)}{b^2d^2}+\frac{afc^2}{b^2d^2}+\frac{2ae\ln\left(e^{dx+c}\right)}{b^2d}+\frac{a^3fx^2}{2b^4}+\frac{afx^2}{2b^2}-\frac{a^3ex}{b^4}-\frac{aex}{b^2}$$
$$+\frac{2afcx}{b^2d}-\frac{2afc\ln\left(e^{dx+c}\right)}{b^2d^2}+\frac{afc\ln\left(b\,e^{2dx+2c}+2a\,e^{dx+c}-b\right)}{b^2d^2}-\frac{af\ln\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)x}{b^2d}-\frac{af\ln\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)c}{b^2d^2}$$
$$-\frac{af\ln\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)x}{b^2d}-\frac{af\ln\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)c}{b^2d^2}+\frac{(3dfx+3de-f)\,e^{3dx+3c}}{72d^2b}-\frac{(3dfx+3de+f)\,e^{-3dx-3c}}{72d^2b}$$

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

$$-\frac{a^3f\ln\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)c}{b^4d^2}-\frac{2a^3fc\ln\left(e^{dx+c}\right)}{b^4d^2}+\frac{a^3fc\ln\left(b\,e^{2dx+2c}+2a\,e^{dx+c}-b\right)}{b^4d^2}$$

$$+\frac{\left(4a^2dfx+3b^2dfx+4a^2de+3b^2de-4a^2f-3b^2f\right)e^{dx+c}}{8b^3d^2}$$

Problem 95: Unable to integrate problem.

$$\int\frac{(fx+e)^3\tanh(dx+c)}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 4, 953 leaves, 39 steps):

$$\frac{3Ia^2f(fx+e)^2\operatorname{polylog}\left(2,-Ie^{dx+c}\right)}{b\left(a^2+b^2\right)d^2}+\frac{6Ia^2f^2(fx+e)\operatorname{polylog}\left(3,Ie^{dx+c}\right)}{b\left(a^2+b^2\right)d^3}-\frac{6Ia^2f^3\operatorname{polylog}\left(4,Ie^{dx+c}\right)}{b\left(a^2+b^2\right)d^4}+\frac{3If(fx+e)^2\operatorname{polylog}\left(2,Ie^{dx+c}\right)}{bd^2}$$

$$+\frac{6If^2(fx+e)\operatorname{polylog}\left(3,-Ie^{dx+c}\right)}{bd^3}+\frac{a(fx+e)^3\ln\left(1+e^{2dx+2c}\right)}{\left(a^2+b^2\right)d}-\frac{a(fx+e)^3\ln\left(1+\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d}$$

$$-\frac{a(fx+e)^3\ln\left(1+\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d}-\frac{6af^3\operatorname{polylog}\left(4,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d^4}-\frac{6af^3\operatorname{polylog}\left(4,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d^4}$$

$$-\frac{3af(fx+e)^2\operatorname{polylog}\left(2,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d^2}-\frac{3af(fx+e)^2\operatorname{polylog}\left(2,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d^2}+\frac{6af^2(fx+e)\operatorname{polylog}\left(3,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d^3}$$

$$+\frac{6af^2(fx+e)\operatorname{polylog}\left(3,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d^3}-\frac{2a^2(fx+e)^3\arctan\left(e^{dx+c}\right)}{b\left(a^2+b^2\right)d}+\frac{3af(fx+e)^2\operatorname{polylog}\left(2,-e^{2dx+2c}\right)}{2\left(a^2+b^2\right)d^2}$$

$$-\frac{3af^2(fx+e)\operatorname{polylog}\left(3,-e^{2dx+2c}\right)}{2\left(a^2+b^2\right)d^3}+\frac{6If^3\operatorname{polylog}\left(4,Ie^{dx+c}\right)}{bd^4}-\frac{3If(fx+e)^2\operatorname{polylog}\left(2,-Ie^{dx+c}\right)}{bd^2}-\frac{6If^2(fx+e)\operatorname{polylog}\left(3,Ie^{dx+c}\right)}{bd^3}$$

$$+\frac{2(fx+e)^3\arctan\left(e^{dx+c}\right)}{bd}+\frac{6Ia^2f^3\operatorname{polylog}\left(4,-Ie^{dx+c}\right)}{b\left(a^2+b^2\right)d^4}-\frac{3Ia^2f(fx+e)^2\operatorname{polylog}\left(2,Ie^{dx+c}\right)}{b\left(a^2+b^2\right)d^2}-\frac{6Ia^2f^2(fx+e)\operatorname{polylog}\left(3,-Ie^{dx+c}\right)}{b\left(a^2+b^2\right)d^3}$$

$$+\frac{3af^3\operatorname{polylog}\left(4,-e^{2dx+2c}\right)}{4\left(a^2+b^2\right)d^4}-\frac{6If^3\operatorname{polylog}\left(4,-Ie^{dx+c}\right)}{bd^4}$$

Result(type 8, 28 leaves):

$$\int \frac{(fx+e)^3 \tanh(dx+c)}{a+b\sinh(dx+c)}\, dx$$

Problem 96: Unable to integrate problem.

$$\int \frac{(fx+e)^2 \tanh(dx+c)}{a+b\sinh(dx+c)}\, dx$$

Optimal(type 4, 670 leaves, 32 steps):

$$\frac{2\,(fx+e)^2 \arctan(e^{dx+c})}{b\,d} - \frac{2\,a^2\,(fx+e)^2 \arctan(e^{dx+c})}{b\,(a^2+b^2)\,d} + \frac{a\,(fx+e)^2 \ln(1+e^{2\,dx+2\,c})}{(a^2+b^2)\,d} - \frac{a\,(fx+e)^2 \ln\left(1+\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{(a^2+b^2)\,d}$$
$$- \frac{a\,(fx+e)^2 \ln\left(1+\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{(a^2+b^2)\,d} + \frac{2\,I\,a^2 f\,(fx+e)\,\mathrm{polylog}(2,-I\,e^{dx+c})}{b\,(a^2+b^2)\,d^2} + \frac{2\,I\,a^2 f^2\,\mathrm{polylog}(3,I\,e^{dx+c})}{b\,(a^2+b^2)\,d^3} - \frac{2\,I\,f\,(fx+e)\,\mathrm{polylog}(2,-I\,e^{dx+c})}{b\,d^2}$$
$$- \frac{2\,I\,a^2 f\,(fx+e)\,\mathrm{polylog}(2,I\,e^{dx+c})}{b\,(a^2+b^2)\,d^2} + \frac{a\,f\,(fx+e)\,\mathrm{polylog}(2,-e^{2\,dx+2\,c})}{(a^2+b^2)\,d^2} - \frac{2\,a\,f\,(fx+e)\,\mathrm{polylog}\left(2,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{(a^2+b^2)\,d^2}$$
$$- \frac{2\,a\,f\,(fx+e)\,\mathrm{polylog}\left(2,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{(a^2+b^2)\,d^2} + \frac{2\,I\,f^2\,\mathrm{polylog}(3,-I\,e^{dx+c})}{b\,d^3} - \frac{2\,I\,f^2\,\mathrm{polylog}(3,I\,e^{dx+c})}{b\,d^3} - \frac{2\,I\,a^2 f^2\,\mathrm{polylog}(3,-I\,e^{dx+c})}{b\,(a^2+b^2)\,d^3}$$
$$+ \frac{2\,I\,f\,(fx+e)\,\mathrm{polylog}(2,I\,e^{dx+c})}{b\,d^2} - \frac{a\,f^2\,\mathrm{polylog}(3,-e^{2\,dx+2\,c})}{2\,(a^2+b^2)\,d^3} + \frac{2\,a\,f^2\,\mathrm{polylog}\left(3,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{(a^2+b^2)\,d^3} + \frac{2\,a\,f^2\,\mathrm{polylog}\left(3,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{(a^2+b^2)\,d^3}$$

Result(type 8, 28 leaves):

$$\int \frac{(fx+e)^2 \tanh(dx+c)}{a+b\sinh(dx+c)}\, dx$$

Problem 97: Unable to integrate problem.

$$\int \frac{(fx+e)^2 \operatorname{sech}(dx+c)\tanh(dx+c)}{a+b\sinh(dx+c)}\, dx$$

Optimal(type 4, 611 leaves, 30 steps):

$$\frac{(fx+e)^2}{b\,d} - \frac{a^2\,(fx+e)^2}{b\,(a^2+b^2)\,d} + \frac{4\,a\,f\,(fx+e)\arctan(e^{dx+c})}{(a^2+b^2)\,d^2} - \frac{2\,f\,(fx+e)\ln(1+e^{2\,dx+2\,c})}{b\,d^2} + \frac{2\,a^2 f\,(fx+e)\ln(1+e^{2\,dx+2\,c})}{b\,(a^2+b^2)\,d^2}$$

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

$$-\frac{f^2 \operatorname{polylog}(2, -e^{2dx+2c})}{b d^3}+\frac{a^2 f^2 \operatorname{polylog}(2, -e^{2dx+2c})}{b (a^2+b^2) d^3}-\frac{2 a b f (fx+e) \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2} d^2}$$

$$+\frac{2 a b f (fx+e) \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2} d^2}+\frac{2 a b f^2 \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2} d^3}-\frac{2 a b f^2 \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2} d^3}$$

$$-\frac{a (fx+e)^2 \operatorname{sech}(dx+c)}{(a^2+b^2) d}+\frac{(fx+e)^2 \tanh(dx+c)}{b d}-\frac{a^2 (fx+e)^2 \tanh(dx+c)}{b (a^2+b^2) d}$$

Result(type 8, 340 leaves):

$$-\frac{2 (x^2 f^2+2 efx+e^2) (a e^{dx+c}+b)}{d (a^2+b^2) ((e^{dx+c})^2+1)}+2 \left(\int \frac{1}{d (a^2+b^2) ((e^{dx+c})^2+1) (b (e^{dx+c})^2+2 a e^{dx+c}-b)} \left(-a b d f^2 x^2 (e^{dx+c})^3-2 a b d efx (e^{dx+c})^3\right.\right.$$
$$-a b d e^2 (e^{dx+c})^3-a b d f^2 x^2 e^{dx+c}+2 a b f^2 x (e^{dx+c})^3+4 a^2 f^2 x (e^{dx+c})^2-2 a b d efx e^{dx+c}+2 a b ef (e^{dx+c})^3+2 b^2 f^2 x (e^{dx+c})^2$$
$$\left.\left.+4 a^2 ef (e^{dx+c})^2-a b d e^2 e^{dx+c}+2 a b f^2 x e^{dx+c}+2 b^2 ef (e^{dx+c})^2+2 a b ef e^{dx+c}-2 b^2 f^2 x-2 b^2 ef\right) dx\right)$$

Problem 98: Unable to integrate problem.

$$\int \frac{(fx+e)^2 \cosh(dx+c) \sinh(dx+c)^2}{a+b \sinh(dx+c)} dx$$

Optimal(type 4, 419 leaves, 17 steps):

$$\frac{efx}{2 b d}+\frac{f^2 x^2}{4 b d}-\frac{a^2 (fx+e)^3}{3 b^3 f}+\frac{2 a f (fx+e) \cosh(dx+c)}{b^2 d^2}+\frac{a^2 (fx+e)^2 \ln\left(1+\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^3 d}+\frac{a^2 (fx+e)^2 \ln\left(1+\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^3 d}$$

$$+\frac{2 a^2 f (fx+e) \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^3 d^2}+\frac{2 a^2 f (fx+e) \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^3 d^2}-\frac{2 a^2 f^2 \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^3 d^3}$$

$$-\frac{2 a^2 f^2 \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^3 d^3}-\frac{2 a f^2 \sinh(dx+c)}{b^2 d^3}-\frac{a (fx+e)^2 \sinh(dx+c)}{b^2 d}-\frac{f (fx+e) \cosh(dx+c) \sinh(dx+c)}{2 b d^2}$$

$$+\frac{f^2 \sinh(dx+c)^2}{4 b d^3}+\frac{(fx+e)^2 \sinh(dx+c)^2}{2 b d}$$

Result(type 8, 358 leaves):

$$\frac{a^2\left(\frac{1}{3}x^3f^2+efx^2+e^2x\right)}{b^3}+\frac{\left(2d^2f^2x^2+4d^2efx+2d^2e^2-2df^2x-2efd+f^2\right)\left(e^{dx+c}\right)^2}{16bd^3}-\frac{a\left(d^2f^2x^2+2d^2efx+d^2e^2-2df^2x-2efd+2f^2\right)e^{dx+c}}{2b^2d^3}$$
$$+\frac{a\left(d^2f^2x^2+2d^2efx+d^2e^2+2df^2x+2efd+2f^2\right)}{2b^2d^3e^{dx+c}}+\frac{2d^2f^2x^2+4d^2efx+2d^2e^2+2df^2x+2efd+f^2}{16bd^3\left(e^{dx+c}\right)^2}+\int$$
$$-\frac{2a^2\left(af^2x^2e^{dx+c}+2aefxe^{dx+c}-bf^2x^2+ae^2e^{dx+c}-2befx-be^2\right)}{\left(b\left(e^{dx+c}\right)^2+2ae^{dx+c}-b\right)b^3}\,dx$$

Problem 99: Result more than twice size of optimal antiderivative.

$$\int\frac{(fx+e)\cosh(dx+c)\sinh(dx+c)^2}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 4, 258 leaves, 14 steps):

$$\frac{fx}{4bd}-\frac{a^2(fx+e)^2}{2b^3f}+\frac{af\cosh(dx+c)}{b^2d^2}+\frac{a^2(fx+e)\ln\left(1+\frac{be^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^3d}+\frac{a^2(fx+e)\ln\left(1+\frac{be^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^3d}$$
$$+\frac{a^2f\operatorname{polylog}\left(2,-\frac{be^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{a^2f\operatorname{polylog}\left(2,-\frac{be^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^3d^2}-\frac{a(fx+e)\sinh(dx+c)}{b^2d}-\frac{f\cosh(dx+c)\sinh(dx+c)}{4bd^2}$$
$$+\frac{(fx+e)\sinh(dx+c)^2}{2bd}$$

Result(type 4, 564 leaves):

$$-\frac{a^2fx^2}{2b^3}+\frac{a^2ex}{b^3}+\frac{(2dfx+2de-f)e^{2dx+2c}}{16bd^2}-\frac{a(dfx+de-f)e^{dx+c}}{2b^2d^2}+\frac{a(dfx+de+f)e^{-dx-c}}{2b^2d^2}+\frac{(2dfx+2de+f)e^{-2dx-2c}}{16bd^2}$$
$$+\frac{2a^2fc\ln\left(e^{dx+c}\right)}{b^3d^2}-\frac{a^2fc\ln\left(be^{2dx+2c}+2ae^{dx+c}-b\right)}{b^3d^2}-\frac{2a^2e\ln\left(e^{dx+c}\right)}{b^3d}+\frac{a^2e\ln\left(be^{2dx+2c}+2ae^{dx+c}-b\right)}{b^3d}-\frac{2a^2fcx}{b^3d}-\frac{a^2fc^2}{b^3d^2}$$
$$+\frac{a^2f\ln\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)x}{b^3d}+\frac{a^2f\ln\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)c}{b^3d^2}+\frac{a^2f\ln\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)x}{b^3d}$$
$$+\frac{a^2f\ln\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)c}{b^3d^2}+\frac{a^2f\operatorname{dilog}\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{a^2f\operatorname{dilog}\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)}{b^3d^2}$$

Problem 100: Result more than twice size of optimal antiderivative.

$$\int \frac{(fx+e)\cosh(dx+c)^2\sinh(dx+c)^2}{a+b\sinh(dx+c)}\,dx$$

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Optimal(type 4, 367 leaves, 19 steps):
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$$-\frac{a^3 e x}{b^4}-\frac{a e x}{2 b^2}-\frac{a^3 f x^2}{2 b^4}-\frac{a f x^2}{4 b^2}+\frac{a^2 (fx+e)\cosh(dx+c)}{b^3 d}+\frac{a f\cosh(dx+c)^2}{4 b^2 d^2}+\frac{(fx+e)\cosh(dx+c)^3}{3 b d}-\frac{a^2 f\sinh(dx+c)}{b^3 d^2}-\frac{f\sinh(dx+c)}{3 b d^2}$$
$$-\frac{a (fx+e)\cosh(dx+c)\sinh(dx+c)}{2 b^2 d}-\frac{f\sinh(dx+c)^3}{9 b d^2}+\frac{a^2 (fx+e)\ln\left(1+\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)\sqrt{a^2+b^2}}{b^4 d}$$
$$-\frac{a^2 (fx+e)\ln\left(1+\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)\sqrt{a^2+b^2}}{b^4 d}+\frac{a^2 f\,\mathrm{polylog}\left(2,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)\sqrt{a^2+b^2}}{b^4 d^2}-\frac{a^2 f\,\mathrm{polylog}\left(2,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)\sqrt{a^2+b^2}}{b^4 d^2}$$

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Result(type 4, 1127 leaves):
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$$-\frac{a (2dfx+2de-f)\,e^{2dx+2c}}{16 b^2 d^2}+\frac{a (2dfx+2de+f)\,e^{-2dx-2c}}{16 b^2 d^2}+\frac{(4a^2+b^2)(dfx+de+f)\,e^{-dx-c}}{8 b^3 d^2}-\frac{a^3 f x^2}{2 b^4}-\frac{a f x^2}{4 b^2}-\frac{a^3 e x}{b^4}-\frac{a e x}{2 b^2}$$
$$-\frac{2 a^4 e\,\mathrm{arctanh}\left(\frac{2 e^{dx+c} b+2a}{2\sqrt{a^2+b^2}}\right)}{b^4 d\sqrt{a^2+b^2}}+\frac{a^4 f\,\mathrm{dilog}\left(\frac{-e^{dx+c} b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)}{b^4 d^2\sqrt{a^2+b^2}}-\frac{a^4 f\,\mathrm{dilog}\left(\frac{e^{dx+c} b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)}{b^4 d^2\sqrt{a^2+b^2}}$$
$$+\frac{a^2 f\ln\left(\frac{-e^{dx+c} b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)x}{b^2 d\sqrt{a^2+b^2}}+\frac{a^2 f\ln\left(\frac{-e^{dx+c} b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)c}{b^2 d^2\sqrt{a^2+b^2}}-\frac{a^2 f\ln\left(\frac{e^{dx+c} b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)x}{b^2 d\sqrt{a^2+b^2}}$$
$$-\frac{a^2 f\ln\left(\frac{e^{dx+c} b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)c}{b^2 d^2\sqrt{a^2+b^2}}+\frac{2 a^2 c f\,\mathrm{arctanh}\left(\frac{2 e^{dx+c} b+2a}{2\sqrt{a^2+b^2}}\right)}{b^2 d^2\sqrt{a^2+b^2}}-\frac{2 a^2 e\,\mathrm{arctanh}\left(\frac{2 e^{dx+c} b+2a}{2\sqrt{a^2+b^2}}\right)}{b^2 d\sqrt{a^2+b^2}}$$
$$+\frac{a^2 f\,\mathrm{dilog}\left(\frac{-e^{dx+c} b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)}{b^2 d^2\sqrt{a^2+b^2}}-\frac{a^2 f\,\mathrm{dilog}\left(\frac{e^{dx+c} b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)}{b^2 d^2\sqrt{a^2+b^2}}+\frac{(3dfx+3de-f)\,e^{3dx+3c}}{72 d^2 b}+\frac{(3dfx+3de+f)\,e^{-3dx-3c}}{72 d^2 b}$$
$$+\frac{a^4 f\ln\left(\frac{-e^{dx+c} b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)x}{b^4 d\sqrt{a^2+b^2}}+\frac{a^4 f\ln\left(\frac{-e^{dx+c} b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)c}{b^4 d^2\sqrt{a^2+b^2}}-\frac{a^4 f\ln\left(\frac{e^{dx+c} b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)x}{b^4 d\sqrt{a^2+b^2}}$$

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

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Problem 101: Result more than twice size of optimal antiderivative.
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$$\int \frac{\cosh(dx+c)^3 \sinh(dx+c)^2}{a + b \sinh(dx+c)}\, dx$$

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Optimal(type 3, 107 leaves, 4 steps):
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$$\frac{a^2 \left(a^2+b^2\right) \ln(a + b \sinh(dx+c))}{b^5 d} - \frac{a \left(a^2+b^2\right) \sinh(dx+c)}{b^4 d} + \frac{\left(a^2+b^2\right) \sinh(dx+c)^2}{2 b^3 d} - \frac{a \sinh(dx+c)^3}{3 b^2 d} + \frac{\sinh(dx+c)^4}{4 b d}$$

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Result(type 3, 613 leaves):
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$$\frac{5}{8 d b \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^2} + \frac{5}{8 d b \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^2} + \frac{1}{4 d b \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^4} + \frac{1}{2 d b \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^3}$$
$$+ \frac{1}{4 d b \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^4} - \frac{1}{2 d b \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^3} + \frac{3}{8 d b \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)} - \frac{3}{8 d b \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}$$
$$+ \frac{a}{d b^2 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)} - \frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right) a^2}{d b^3} + \frac{a}{d b^2 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)} - \frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right) a^2}{d b^3}$$
$$+ \frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a - 2 \tanh\left(\frac{dx}{2}+\frac{c}{2}\right) b - a\right) a^2}{d b^3} + \frac{a}{3 d b^2 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^3} + \frac{a^2}{2 d b^3 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^2}$$
$$+ \frac{a}{2 d b^2 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^2} + \frac{a^3}{d b^4 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)} + \frac{a^2}{2 d b^3 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)} - \frac{a^4 \ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{d b^5}$$
$$+ \frac{a}{3 d b^2 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^3} + \frac{a^2}{2 d b^3 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^2} - \frac{a}{2 d b^2 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^2} + \frac{a^3}{d b^4 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}$$
$$- \frac{a^2}{2 d b^3 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)} - \frac{a^4 \ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{d b^5} + \frac{a^4 \ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a - 2 \tanh\left(\frac{dx}{2}+\frac{c}{2}\right) b - a\right)}{d b^5}$$

Problem 102: Result more than twice size of optimal antiderivative.

$$\int \frac{\sinh(dx+c)\tanh(dx+c)}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 3, 74 leaves, 7 steps):

$$-\frac{a\arctan(\sinh(dx+c))}{(a^2+b^2)\,d}+\frac{b\ln(\cosh(dx+c))}{(a^2+b^2)\,d}+\frac{a^2\ln(a+b\sinh(dx+c))}{b\,(a^2+b^2)\,d}$$

Result(type 3, 152 leaves):

$$-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{d\,b}+\frac{4\,b\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)}{d\,(4\,a^2+4\,b^2)}-\frac{8\,a\arctan\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d\,(4\,a^2+4\,b^2)}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{d\,b}$$
$$+\frac{a^2\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{d\,b\,(a^2+b^2)}$$

Problem 103: Unable to integrate problem.

$$\int \frac{(fx+e)^3\tanh(dx+c)^2}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 4, 1048 leaves, 45 steps):

$$\frac{6\,I\,a^2f^2\,(fx+e)\,\mathrm{polylog}(2,-I\,e^{dx+c})}{b\,(a^2+b^2)\,d^3}-\frac{3\,a^3f(fx+e)^2\ln(1+e^{2\,dx+2\,c})}{b^2\,(a^2+b^2)\,d^2}+\frac{6\,I\,f^2\,(fx+e)\,\mathrm{polylog}(2,I\,e^{dx+c})}{b\,d^3}-\frac{3\,a^3f^2\,(fx+e)\,\mathrm{polylog}(2,-e^{2\,dx+2\,c})}{b^2\,(a^2+b^2)\,d^3}$$
$$-\frac{6\,I\,a^2f^3\,\mathrm{polylog}(3,-I\,e^{dx+c})}{b\,(a^2+b^2)\,d^4}-\frac{6\,a^2f(fx+e)^2\arctan(e^{dx+c})}{b\,(a^2+b^2)\,d^2}+\frac{a^2\,(fx+e)^3\ln\left(1+\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2}\,d}-\frac{a^2\,(fx+e)^3\ln\left(1+\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2}\,d}$$
$$+\frac{6\,a^2f^3\,\mathrm{polylog}\left(4,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2}\,d^4}-\frac{6\,a^2f^3\,\mathrm{polylog}\left(4,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2}\,d^4}+\frac{3\,a\,f(fx+e)^2\ln(1+e^{2\,dx+2\,c})}{b^2\,d^2}$$
$$+\frac{3\,a^2f(fx+e)^2\,\mathrm{polylog}\left(2,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2}\,d^2}-\frac{3\,a^2f(fx+e)^2\,\mathrm{polylog}\left(2,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2}\,d^2}-\frac{6\,a^2f^2\,(fx+e)\,\mathrm{polylog}\left(3,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2}\,d^3}$$
$$+\frac{6\,a^2f^2\,(fx+e)\,\mathrm{polylog}\left(3,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2}\,d^3}+\frac{3\,a\,f^2\,(fx+e)\,\mathrm{polylog}(2,-e^{2\,dx+2\,c})}{b^2\,d^3}+\frac{6\,I\,f^3\,\mathrm{polylog}(3,-I\,e^{dx+c})}{b\,d^4}+\frac{3\,a^3f^3\,\mathrm{polylog}(3,-e^{2\,dx+2\,c})}{2\,b^2\,(a^2+b^2)\,d^4}$$
$$+\frac{a^2\,(fx+e)^3\,\mathrm{sech}(dx+c)}{b\,(a^2+b^2)\,d}+\frac{a^3\,(fx+e)^3\tanh(dx+c)}{b^2\,(a^2+b^2)\,d}-\frac{6\,I\,f^2\,(fx+e)\,\mathrm{polylog}(2,-I\,e^{dx+c})}{b\,d^3}-\frac{(fx+e)^3\,\mathrm{sech}(dx+c)}{b\,d}-\frac{a\,(fx+e)^3}{b^2\,d}$$

$$+\frac{6 I a^2 f^3 \operatorname{polylog}(3, I e^{dx+c})}{b (a^2+b^2) d^4} - \frac{6 I a^2 f^2 (fx+e) \operatorname{polylog}(2, I e^{dx+c})}{b (a^2+b^2) d^3} - \frac{a (fx+e)^3 \tanh(dx+c)}{b^2 d} - \frac{6 I f^3 \operatorname{polylog}(3, I e^{dx+c})}{b d^4} + \frac{a^3 (fx+e)^3}{b^2 (a^2+b^2) d}$$
$$+\frac{6 f (fx+e)^2 \arctan(e^{dx+c})}{b d^2} - \frac{3 a f^3 \operatorname{polylog}(3, -e^{2 dx+2 c})}{2 b^2 d^4}$$

Result(type 8, 489 leaves):

$$\frac{2 (f^3 x^3+3 e f^2 x^2+3 e^2 f x+e^3) (-e^{dx+c} b+a)}{d (a^2+b^2) ((e^{dx+c})^2+1)} + \int \frac{1}{((e^{dx+c})^2+1) (a^2+b^2) (b (e^{dx+c})^2+2 a e^{dx+c}-b) d} \Big(2 \big(a^2 d f^3 x^3 (e^{dx+c})^3$$
$$+3 a^2 d e f^2 x^2 (e^{dx+c})^3+3 a^2 d e^2 f x (e^{dx+c})^3+a^2 d f^3 x^3 e^{dx+c}+3 b^2 f^3 x^2 (e^{dx+c})^3+a^2 d e^3 (e^{dx+c})^3+3 a^2 d e f^2 x^2 e^{dx+c}+3 a b f^3 x^2 (e^{dx+c})^2$$
$$+6 b^2 e f^2 x (e^{dx+c})^3+3 a^2 d e^2 f x e^{dx+c}-6 a^2 f^3 x^2 e^{dx+c}+6 a b e f^2 x (e^{dx+c})^2+3 b^2 e^2 f (e^{dx+c})^3-3 b^2 f^3 x^2 e^{dx+c}+a^2 d e^3 e^{dx+c}-12 a^2 e f^2 x e^{dx+c}$$
$$+3 a b e^2 f (e^{dx+c})^2+3 a b f^3 x^2-6 b^2 e f^2 x e^{dx+c}-6 a^2 e^2 f e^{dx+c}+6 a b e f^2 x-3 b^2 e^2 f e^{dx+c}+3 a b e^2 f\big)\Big) dx$$

Problem 104: Unable to integrate problem.

$$\int \frac{(fx+e)^2 \tanh(dx+c)^2}{a+b \sinh(dx+c)} dx$$

Optimal(type 4, 728 leaves, 37 steps):

$$-\frac{a (fx+e)^2}{b^2 d} + \frac{a^3 (fx+e)^2}{b^2 (a^2+b^2) d} + \frac{4 f (fx+e) \arctan(e^{dx+c})}{b d^2} - \frac{4 a^2 f (fx+e) \arctan(e^{dx+c})}{b (a^2+b^2) d^2} + \frac{2 a f (fx+e) \ln(1+e^{2 dx+2 c})}{b^2 d^2}$$
$$-\frac{2 a^3 f (fx+e) \ln(1+e^{2 dx+2 c})}{b^2 (a^2+b^2) d^2} + \frac{a^2 (fx+e)^2 \ln\left(1+\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2} d} - \frac{a^2 (fx+e)^2 \ln\left(1+\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2} d} - \frac{2 I a^2 f^2 \operatorname{polylog}(2, I e^{dx+c})}{b (a^2+b^2) d^3}$$
$$-\frac{2 I f^2 \operatorname{polylog}(2, -I e^{dx+c})}{b d^3} + \frac{2 I a^2 f^2 \operatorname{polylog}(2, -I e^{dx+c})}{b (a^2+b^2) d^3} + \frac{2 I f^2 \operatorname{polylog}(2, I e^{dx+c})}{b d^3} + \frac{a f^2 \operatorname{polylog}(2, -e^{2 dx+2 c})}{b^2 d^3} - \frac{a^3 f^2 \operatorname{polylog}(2, -e^{2 dx+2 c})}{b^2 (a^2+b^2) d^3}$$
$$+\frac{2 a^2 f (fx+e) \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2} d^2} - \frac{2 a^2 f (fx+e) \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2} d^2} - \frac{2 a^2 f^2 \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2} d^3}$$
$$+\frac{2 a^2 f^2 \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2} d^3} - \frac{(fx+e)^2 \operatorname{sech}(dx+c)}{b d} + \frac{a^2 (fx+e)^2 \operatorname{sech}(dx+c)}{b (a^2+b^2) d} - \frac{a (fx+e)^2 \tanh(dx+c)}{b^2 d}$$
$$+\frac{a^3 (fx+e)^2 \tanh(dx+c)}{b^2 (a^2+b^2) d}$$

Result(type 8, 338 leaves):

$$\frac{2 (x^2 f^2+2 e f x+e^2) (-e^{dx+c} b+a)}{d (a^2+b^2) ((e^{dx+c})^2+1)} + \int \frac{1}{((e^{dx+c})^2+1) (a^2+b^2) (b (e^{dx+c})^2+2 a e^{dx+c}-b) d} \Big(2 \big((e^{dx+c})^3 a^2 d f^2 x^2+2 (e^{dx+c})^3 a^2 d e f x$$

$$+\left(e^{dx+c}\right)^3 a^2 d e^2+e^{dx+c} a^2 d f^2 x^2+2\left(e^{dx+c}\right)^3 b^2 f^2 x+2 e^{dx+c} a^2 d e f x+2\left(e^{dx+c}\right)^2 a b f^2 x+2\left(e^{dx+c}\right)^3 b^2 e f+e^{dx+c} a^2 d e^2-4 e^{dx+c} a^2 f^2 x$$
$$+2\left(e^{dx+c}\right)^2 a b e f-2 e^{dx+c} b^2 f^2 x-4 e^{dx+c} a^2 e f+2 a b f^2 x-2 e^{dx+c} b^2 e f+2 a b e f\Big)\Big)\, dx$$

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Problem 105: Result more than twice size of optimal antiderivative.
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$$\int \frac{(fx+e)\operatorname{sech}(dx+c)\tanh(dx+c)^2}{a+b\sinh(dx+c)}\, dx$$

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Optimal(type 4, 701 leaves, 42 steps):
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$$-\frac{a(fx+e)\arctan\left(e^{dx+c}\right)}{b^2 d}+\frac{2a^3(fx+e)\arctan\left(e^{dx+c}\right)}{\left(a^2+b^2\right)^2 d}+\frac{a^3(fx+e)\arctan\left(e^{dx+c}\right)}{b^2\left(a^2+b^2\right) d}-\frac{a^2 b(fx+e)\ln\left(1+e^{2dx+2c}\right)}{\left(a^2+b^2\right)^2 d}$$
$$+\frac{a^2 b(fx+e)\ln\left(1+\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^2 d}+\frac{a^2 b(fx+e)\ln\left(1+\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^2 d}-\frac{I a f \operatorname{polylog}\left(2, I e^{dx+c}\right)}{2 b^2 d^2}+\frac{I a^3 f \operatorname{polylog}\left(2, I e^{dx+c}\right)}{\left(a^2+b^2\right)^2 d^2}$$
$$+\frac{I a f \operatorname{polylog}\left(2, -I e^{dx+c}\right)}{2 b^2 d^2}+\frac{I a^3 f \operatorname{polylog}\left(2, I e^{dx+c}\right)}{2 b^2\left(a^2+b^2\right) d^2}-\frac{I a^3 f \operatorname{polylog}\left(2, -I e^{dx+c}\right)}{\left(a^2+b^2\right)^2 d^2}-\frac{I a^3 f \operatorname{polylog}\left(2, -I e^{dx+c}\right)}{2 b^2\left(a^2+b^2\right) d^2}-\frac{a^2 b f \operatorname{polylog}\left(2, -e^{2dx+2c}\right)}{2\left(a^2+b^2\right)^2 d^2}$$
$$+\frac{a^2 b f \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^2 d^2}+\frac{a^2 b f \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^2 d^2}-\frac{a f \operatorname{sech}(dx+c)}{2 b^2 d^2}+\frac{a^3 f \operatorname{sech}(dx+c)}{2 b^2\left(a^2+b^2\right) d^2}-\frac{(fx+e)\operatorname{sech}(dx+c)^2}{2 b d}$$
$$+\frac{a^2(fx+e)\operatorname{sech}(dx+c)^2}{2b\left(a^2+b^2\right) d}+\frac{f\tanh(dx+c)}{2 b d^2}-\frac{a^2 f\tanh(dx+c)}{2b\left(a^2+b^2\right) d^2}-\frac{a(fx+e)\operatorname{sech}(dx+c)\tanh(dx+c)}{2 b^2 d}$$
$$+\frac{a^3(fx+e)\operatorname{sech}(dx+c)\tanh(dx+c)}{2 b^2\left(a^2+b^2\right) d}$$

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Result(type ?, 2067 leaves): Display of huge result suppressed!
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Problem 107: Unable to integrate problem.
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$$\int \frac{(fx+e)^2\cosh(dx+c)\sinh(dx+c)^3}{a+b\sinh(dx+c)}\, dx$$

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Optimal(type 4, 538 leaves, 22 steps):
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$$-\frac{a e f x}{2 b^2 d}-\frac{a f^2 x^2}{4 b^2 d}+\frac{a^3(fx+e)^3}{3 b^4 f}-\frac{2a^2 f(fx+e)\cosh(dx+c)}{b^3 d^2}+\frac{4 f(fx+e)\cosh(dx+c)}{9 b d^2}-\frac{a^3(fx+e)^2\ln\left(1+\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^4 d}$$
$$-\frac{a^3(fx+e)^2\ln\left(1+\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^4 d}-\frac{2a^3 f(fx+e)\operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^4 d^2}-\frac{2a^3 f(fx+e)\operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^4 d^2}$$

$$+\frac{2 a^3 f^2 \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^4 d^3}+\frac{2 a^3 f^2 \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^4 d^3}+\frac{2 a^2 f^2 \sinh(dx+c)}{b^3 d^3}-\frac{4 f^2 \sinh(dx+c)}{9 b d^3}$$
$$+\frac{a^2 (fx+e)^2 \sinh(dx+c)}{b^3 d}+\frac{a f (fx+e) \cosh(dx+c) \sinh(dx+c)}{2 b^2 d^2}-\frac{a f^2 \sinh(dx+c)^2}{4 b^2 d^3}-\frac{a (fx+e)^2 \sinh(dx+c)^2}{2 b^2 d}$$
$$-\frac{2 f (fx+e) \cosh(dx+c) \sinh(dx+c)^2}{9 b d^2}+\frac{2 f^2 \sinh(dx+c)^3}{27 b d^3}+\frac{(fx+e)^2 \sinh(dx+c)^3}{3 b d}$$

Result(type 8, 574 leaves):

$$-\frac{a^3 \left(\frac{1}{3} x^3 f^2+e f x^2+e^2 x\right)}{b^4}+\frac{\left(9 d^2 f^2 x^2+18 d^2 e f x+9 d^2 e^2-6 d f^2 x-6 e f d+2 f^2\right) \left(e^{dx+c}\right)^3}{216 b d^3}$$
$$-\frac{a \left(2 d^2 f^2 x^2+4 d^2 e f x+2 d^2 e^2-2 d f^2 x-2 e f d+f^2\right) \left(e^{dx+c}\right)^2}{16 b^2 d^3}$$
$$+\frac{\left(4 a^2 d^2 f^2 x^2-b^2 d^2 f^2 x^2+8 a^2 d^2 e f x-2 b^2 d^2 e f x+4 a^2 d^2 e^2-8 a^2 d f^2 x-b^2 d^2 e^2+2 b^2 d f^2 x-8 a^2 d e f+2 e f d b^2+8 a^2 f^2-2 b^2 f^2\right) e^{dx+c}}{8 b^3 d^3}$$
$$-\frac{\left(4 a^2-b^2\right) \left(d^2 f^2 x^2+2 d^2 e f x+d^2 e^2+2 d f^2 x+2 e f d+2 f^2\right)}{8 b^3 d^3 e^{dx+c}}-\frac{a \left(2 d^2 f^2 x^2+4 d^2 e f x+2 d^2 e^2+2 d f^2 x+2 e f d+f^2\right)}{16 b^2 d^3 \left(e^{dx+c}\right)^2}$$
$$-\frac{9 d^2 f^2 x^2+18 d^2 e f x+9 d^2 e^2+6 d f^2 x+6 e f d+2 f^2}{216 b d^3 \left(e^{dx+c}\right)^3}+\int \frac{2 a^3 \left(a f^2 x^2 e^{dx+c}+2 a e f x e^{dx+c}-b f^2 x^2+a e^2 e^{dx+c}-2 b e f x-b e^2\right)}{\left(b \left(e^{dx+c}\right)^2+2 a e^{dx+c}-b\right) b^4}\, dx$$

Problem 108: Result more than twice size of optimal antiderivative.

$$\int \frac{(fx+e) \cosh(dx+c)^3 \sinh(dx+c)^3}{a+b \sinh(dx+c)}\, dx$$

Optimal(type 4, 593 leaves, 31 steps):

$$-\frac{a^3 f x}{4 b^4 d}+\frac{3 a f x}{32 b^2 d}+\frac{a^3 \left(a^2+b^2\right) (fx+e)^2}{2 b^6 f}-\frac{a^4 f \cosh(dx+c)}{b^5 d^2}-\frac{2 a^2 f \cosh(dx+c)}{3 b^3 d^2}+\frac{f \cosh(dx+c)}{8 b d^2}-\frac{a^2 f \cosh(dx+c)^3}{9 b^3 d^2}$$
$$-\frac{a (fx+e) \cosh(dx+c)^4}{4 b^2 d}-\frac{f \cosh(3 dx+3 c)}{144 b d^2}-\frac{f \cosh(5 dx+5 c)}{400 b d^2}-\frac{a^3 \left(a^2+b^2\right) (fx+e) \ln\left(1+\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^6 d}$$
$$-\frac{a^3 \left(a^2+b^2\right) (fx+e) \ln\left(1+\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^6 d}-\frac{a^3 \left(a^2+b^2\right) f \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^6 d^2}-\frac{a^3 \left(a^2+b^2\right) f \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^6 d^2}$$
$$+\frac{a^4 (fx+e) \sinh(dx+c)}{b^5 d}+\frac{2 a^2 (fx+e) \sinh(dx+c)}{3 b^3 d}-\frac{(fx+e) \sinh(dx+c)}{8 b d}+\frac{a^3 f \cosh(dx+c) \sinh(dx+c)}{4 b^4 d^2}$$

$$+\frac{3 a f\cosh(d x+c)\sinh(d x+c)}{32 b^2 d^2}+\frac{a^2 (f x+e)\cosh(d x+c)^2\sinh(d x+c)}{3 b^3 d}+\frac{a f\cosh(d x+c)^3\sinh(d x+c)}{16 b^2 d^2}-\frac{a^3 (f x+e)\sinh(d x+c)^2}{2 b^4 d}$$
$$+\frac{(f x+e)\sinh(3 d x+3 c)}{48 b d}+\frac{(f x+e)\sinh(5 d x+5 c)}{80 b d}$$

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Result(type 4, 1362 leaves):
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$$-\frac{a^3 e\ln\left(b e^{2 d x+2 c}+2 a e^{d x+c}-b\right)}{b^4 d}-\frac{a^3 f\operatorname{dilog}\left(\frac{e^{d x+c} b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)}{b^4 d^2}-\frac{a^3 f\operatorname{dilog}\left(\frac{-e^{d x+c} b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)}{b^4 d^2}+\frac{2 a^3 e\ln\left(e^{d x+c}\right)}{b^4 d}+\frac{a^3 f c^2}{b^4 d^2}$$
$$-\frac{a\left(2 a^2+b^2\right)(2 d f x+2 d e+f) e^{-2 d x-2 c}}{32 b^4 d^2}+\frac{a^3 f x^2}{2 b^4}-\frac{a^3 e x}{b^4}+\frac{a^5 f c^2}{b^6 d^2}+\frac{2 a^5 e\ln\left(e^{d x+c}\right)}{b^6 d}-\frac{a^5 e\ln\left(b e^{2 d x+2 c}+2 a e^{d x+c}-b\right)}{b^6 d}$$
$$-\frac{a^5 f\operatorname{dilog}\left(\frac{e^{d x+c} b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)}{b^6 d^2}-\frac{a^5 f\operatorname{dilog}\left(\frac{-e^{d x+c} b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)}{b^6 d^2}+\frac{2 a^5 f c x}{b^6 d}-\frac{a^5 f\ln\left(\frac{-e^{d x+c} b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right) x}{b^6 d}$$
$$-\frac{a^5 f\ln\left(\frac{-e^{d x+c} b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right) c}{b^6 d^2}-\frac{a^5 f\ln\left(\frac{e^{d x+c} b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right) x}{b^6 d}-\frac{a^5 f\ln\left(\frac{e^{d x+c} b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right) c}{b^6 d^2}-\frac{2 a^5 f c\ln\left(e^{d x+c}\right)}{b^6 d^2}$$
$$+\frac{a^5 f c\ln\left(b e^{2 d x+2 c}+2 a e^{d x+c}-b\right)}{b^6 d^2}+\frac{a^5 f x^2}{2 b^6}-\frac{a^5 e x}{b^6}$$
$$+\frac{\left(8 a^4 d f x+6 a^2 b^2 d f x-b^4 d f x+8 a^4 d e+6 a^2 b^2 d e-b^4 d e-8 a^4 f-6 a^2 b^2 f+b^4 f\right) e^{d x+c}}{16 b^5 d^2}+\frac{(5 d f x+5 d e-f) e^{5 d x+5 c}}{800 b d^2}$$
$$+\frac{\left(12 a^2 d f x+3 b^2 d f x+12 a^2 d e+3 b^2 d e-4 a^2 f-b^2 f\right) e^{3 d x+3 c}}{288 b^3 d^2}-\frac{(5 d f x+5 d e+f) e^{-5 d x-5 c}}{800 b d^2}-\frac{a (4 d f x+4 d e-f) e^{4 d x+4 c}}{256 b^2 d^2}$$
$$-\frac{a\left(4 a^2 d f x+2 b^2 d f x+4 a^2 d e+2 b^2 d e-2 a^2 f-b^2 f\right) e^{2 d x+2 c}}{32 b^4 d^2}-\frac{\left(8 a^4+6 b^2 a^2-b^4\right)(d f x+d e+f) e^{-d x-c}}{16 b^5 d^2}$$
$$-\frac{\left(4 a^2+b^2\right)(3 d f x+3 d e+f) e^{-3 d x-3 c}}{288 b^3 d^2}-\frac{a (4 d f x+4 d e+f) e^{-4 d x-4 c}}{256 b^2 d^2}+\frac{2 a^3 f c x}{b^4 d}-\frac{a^3 f\ln\left(\frac{-e^{d x+c} b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right) x}{b^4 d}$$
$$-\frac{a^3 f\ln\left(\frac{-e^{d x+c} b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right) c}{b^4 d^2}-\frac{a^3 f\ln\left(\frac{e^{d x+c} b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right) x}{b^4 d}-\frac{a^3 f\ln\left(\frac{e^{d x+c} b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right) c}{b^4 d^2}-\frac{2 a^3 f c\ln\left(e^{d x+c}\right)}{b^4 d^2}$$
$$+\frac{a^3 f c\ln\left(b e^{2 d x+2 c}+2 a e^{d x+c}-b\right)}{b^4 d^2}$$

Problem 109: Unable to integrate problem.

$$\int \frac{(fx+e)^2 \sinh(dx+c)^2 \tanh(dx+c)}{a+b\sinh(dx+c)}\, dx$$

Optimal(type 4, 1004 leaves, 50 steps):

$$\frac{2 I a^4 f (fx+e) \operatorname{polylog}(2, -I e^{dx+c})}{b^3 (a^2+b^2) d^2} - \frac{2 a^3 f (fx+e) \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^2 (a^2+b^2) d^2} - \frac{2 a^3 f (fx+e) \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^2 (a^2+b^2) d^2}$$
$$+ \frac{2 I f (fx+e) \operatorname{polylog}(2, -I e^{dx+c})}{b d^2} + \frac{a^3 f (fx+e) \operatorname{polylog}(2, -e^{2dx+2c})}{b^2 (a^2+b^2) d^2} + \frac{2 I a^2 f^2 \operatorname{polylog}(3, -I e^{dx+c})}{b^3 d^3} - \frac{2 I a^2 f (fx+e) \operatorname{polylog}(2, -I e^{dx+c})}{b^3 d^2}$$
$$- \frac{2 I a^4 f^2 \operatorname{polylog}(3, -I e^{dx+c})}{b^3 (a^2+b^2) d^3} - \frac{a (fx+e)^2 \ln(1+e^{2dx+2c})}{b^2 d} + \frac{a^3 (fx+e)^2 \ln(1+e^{2dx+2c})}{b^2 (a^2+b^2) d} - \frac{a^3 (fx+e)^2 \ln\left(1+\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^2 (a^2+b^2) d}$$
$$- \frac{a^3 (fx+e)^2 \ln\left(1+\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^2 (a^2+b^2) d} + \frac{2 a^3 f^2 \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{b^2 (a^2+b^2) d^3} + \frac{2 a^3 f^2 \operatorname{polylog}\left(3, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{b^2 (a^2+b^2) d^3} - \frac{2 I a^2 f^2 \operatorname{polylog}(3, I e^{dx+c})}{b^3 d^3}$$
$$- \frac{2 a^4 (fx+e)^2 \arctan(e^{dx+c})}{b^3 (a^2+b^2) d} - \frac{a f (fx+e) \operatorname{polylog}(2, -e^{2dx+2c})}{b^2 d^2} + \frac{2 I f^2 \operatorname{polylog}(3, I e^{dx+c})}{b d^3} - \frac{a^3 f^2 \operatorname{polylog}(3, -e^{2dx+2c})}{2 b^2 (a^2+b^2) d^3}$$
$$- \frac{2 I f (fx+e) \operatorname{polylog}(2, I e^{dx+c})}{b d^2} + \frac{2 f^2 \sinh(dx+c)}{b d^3} + \frac{(fx+e)^2 \sinh(dx+c)}{b d} - \frac{2 (fx+e)^2 \arctan(e^{dx+c})}{b d} + \frac{a (fx+e)^3}{3 b^2 f}$$
$$+ \frac{2 I a^2 f (fx+e) \operatorname{polylog}(2, I e^{dx+c})}{b^3 d^2} + \frac{2 I a^4 f^2 \operatorname{polylog}(3, I e^{dx+c})}{b^3 (a^2+b^2) d^3} - \frac{2 I a^4 f (fx+e) \operatorname{polylog}(2, I e^{dx+c})}{b^3 (a^2+b^2) d^2} + \frac{2 a^2 (fx+e)^2 \arctan(e^{dx+c})}{b^3 d}$$
$$+ \frac{a f^2 \operatorname{polylog}(3, -e^{2dx+2c})}{2 b^2 d^3} - \frac{2 I f^2 \operatorname{polylog}(3, -I e^{dx+c})}{b d^3} - \frac{2 f (fx+e) \cosh(dx+c)}{b d^2}$$

Result(type 8, 445 leaves):

$$-\frac{a\left(\frac{1}{3} x^3 f^2 + e f x^2 + e^2 x\right)}{b^2} + \frac{(d^2 f^2 x^2 + 2 d^2 e f x + d^2 e^2 - 2 d f^2 x - 2 e f d + 2 f^2) e^{dx+c}}{2 d^3 b} - \frac{d^2 f^2 x^2 + 2 d^2 e f x + d^2 e^2 + 2 d f^2 x + 2 e f d + 2 f^2}{2 d^3 b e^{dx+c}} +$$
$$\int \frac{1}{b^2 \left(b (e^{dx+c})^4 + 2 a (e^{dx+c})^3 + 2 a e^{dx+c} - b\right)} \Big(2 \big(a^2 f^2 x^2 (e^{dx+c})^3 - b^2 f^2 x^2 (e^{dx+c})^3 + 2 a^2 e f x (e^{dx+c})^3 - a b f^2 x^2 (e^{dx+c})^2 - 2 b^2 e f x (e^{dx+c})^3$$
$$+ a^2 e^2 (e^{dx+c})^3 + a^2 f^2 x^2 e^{dx+c} - 2 a b e f x (e^{dx+c})^2 - b^2 e^2 (e^{dx+c})^3 + b^2 f^2 x^2 e^{dx+c} + 2 a^2 e f x e^{dx+c} - a b e^2 (e^{dx+c})^2 - a b f^2 x^2 + 2 b^2 e f x e^{dx+c}$$
$$+ a^2 e^2 e^{dx+c} - 2 a b e f x + b^2 e^2 e^{dx+c} - a b e^2\big)\Big)\, dx$$

Problem 111: Result more than twice size of optimal antiderivative.

$$\int \frac{(fx+e) \tanh(dx+c)^3}{a+b\sinh(dx+c)}\, dx$$

Optimal(type 4, 820 leaves, 55 steps):

$$-\frac{I a^4 f \operatorname{polylog}(2, I e^{dx+c})}{b (a^2+b^2)^2 d^2} - \frac{I a^4 f \operatorname{polylog}(2, I e^{dx+c})}{2 b^3 (a^2+b^2) d^2} + \frac{I a^4 f \operatorname{polylog}(2, -I e^{dx+c})}{b (a^2+b^2)^2 d^2} + \frac{I a^2 f \operatorname{polylog}(2, I e^{dx+c})}{2 b^3 d^2} - \frac{a^4 (fx+e) \operatorname{sech}(dx+c) \tanh(dx+c)}{2 b^3 (a^2+b^2) d}$$
$$+ \frac{a^3 (fx+e) \ln(1+e^{2dx+2c})}{(a^2+b^2)^2 d} - \frac{a^3 (fx+e) \ln\left(1+\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^2 d} - \frac{a^3 (fx+e) \ln\left(1+\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^2 d} - \frac{a^3 f \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^2 d^2}$$
$$- \frac{a^3 f \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^2 d^2} - \frac{2 a^4 (fx+e) \arctan(e^{dx+c})}{b (a^2+b^2)^2 d} - \frac{a^4 (fx+e) \arctan(e^{dx+c})}{b^3 (a^2+b^2) d} + \frac{I f \operatorname{polylog}(2, I e^{dx+c})}{2 b d^2} - \frac{a^4 f \operatorname{sech}(dx+c)}{2 b^3 (a^2+b^2) d^2}$$
$$- \frac{a^3 (fx+e) \operatorname{sech}(dx+c)^2}{2 b^2 (a^2+b^2) d} + \frac{a^3 f \tanh(dx+c)}{2 b^2 (a^2+b^2) d^2} + \frac{a^2 (fx+e) \operatorname{sech}(dx+c) \tanh(dx+c)}{2 b^3 d} - \frac{I a^2 f \operatorname{polylog}(2, -I e^{dx+c})}{2 b^3 d^2} + \frac{(fx+e) \arctan(e^{dx+c})}{b d}$$
$$- \frac{f \operatorname{sech}(dx+c)}{2 b d^2} + \frac{I a^4 f \operatorname{polylog}(2, -I e^{dx+c})}{2 b^3 (a^2+b^2) d^2} + \frac{a^2 (fx+e) \arctan(e^{dx+c})}{b^3 d} + \frac{a^3 f \operatorname{polylog}(2, -e^{2dx+2c})}{2 (a^2+b^2)^2 d^2} + \frac{a^2 f \operatorname{sech}(dx+c)}{2 b^3 d^2}$$
$$+ \frac{a (fx+e) \operatorname{sech}(dx+c)^2}{2 b^2 d} - \frac{a f \tanh(dx+c)}{2 b^2 d^2} - \frac{(fx+e) \operatorname{sech}(dx+c) \tanh(dx+c)}{2 b d} - \frac{I f \operatorname{polylog}(2, -I e^{dx+c})}{2 b d^2}$$

Result(type ?, 2283 leaves): Display of huge result suppressed!

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

$$\int \frac{(fx+e) \coth(dx+c)}{a+b \sinh(dx+c)}\, dx$$

Optimal(type 4, 191 leaves, 12 steps):

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

Result(type 4, 450 leaves):

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

$$+\frac{f\,\mathrm{dilog}(1+e^{dx+c})}{a\,d^2}+\frac{e\ln(e^{dx+c}-1)}{a\,d}-\frac{e\ln(b\,e^{2dx+2c}+2\,a\,e^{dx+c}-b)}{d\,a}+\frac{e\ln(1+e^{dx+c})}{a\,d}-\frac{c\,f\ln(e^{dx+c}-1)}{a\,d^2}$$
$$+\frac{c\,f\ln(b\,e^{2dx+2c}+2\,a\,e^{dx+c}-b)}{d^2\,a}$$

Problem 113: Unable to integrate problem.

$$\int\frac{(fx+e)^3\cosh(dx+c)\coth(dx+c)}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 4, 589 leaves, 33 steps):

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

Result(type 8, 240 leaves):

$$\frac{\frac{1}{4}\,x^4 f^3+e f^2 x^3+\frac{3}{2}\,e^2 f x^2+e^3 x}{b}+\int-\frac{1}{(b\,(e^{dx+c})^2+2\,a\,e^{dx+c}-b)\,b\,((e^{dx+c})^2-1)}\Big(2\,e^{dx+c}\,\big(a f^3 x^3\,(e^{dx+c})^2+3\,a\,e f^2 x^2\,(e^{dx+c})^2-2\,b f^3 x^3\,e^{dx+c}$$
$$+3\,a\,e^2 f x\,(e^{dx+c})^2-a f^3 x^3-6\,b\,e f^2 x^2\,e^{dx+c}+a\,e^3\,(e^{dx+c})^2-3\,a\,e f^2 x^2-6\,b\,e^2 f x\,e^{dx+c}-3\,a\,e^2 f x-2\,b\,e^3\,e^{dx+c}-a\,e^3\big)\Big)\,dx$$

Problem 114: Unable to integrate problem.

$$\int\frac{(fx+e)^3\cosh(dx+c)^2\coth(dx+c)}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 4, 622 leaves, 34 steps):

$$-\frac{(fx+e)^4}{4af}+\frac{(a^2+b^2)(fx+e)^4}{4ab^2f}-\frac{6f^3\cosh(dx+c)}{bd^4}-\frac{3f(fx+e)^2\cosh(dx+c)}{bd^2}+\frac{(fx+e)^3\ln(1-e^{2dx+2c})}{ad}$$
$$-\frac{(a^2+b^2)(fx+e)^3\ln\left(1+\frac{be^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{ab^2d}-\frac{(a^2+b^2)(fx+e)^3\ln\left(1+\frac{be^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{ab^2d}+\frac{3f(fx+e)^2\,\mathrm{polylog}(2,e^{2dx+2c})}{2ad^2}$$
$$-\frac{3(a^2+b^2)f(fx+e)^2\,\mathrm{polylog}\left(2,-\frac{be^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{ab^2d^2}-\frac{3(a^2+b^2)f(fx+e)^2\,\mathrm{polylog}\left(2,-\frac{be^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{ab^2d^2}-\frac{3f^2(fx+e)\,\mathrm{polylog}(3,e^{2dx+2c})}{2ad^3}$$
$$+\frac{6(a^2+b^2)f^2(fx+e)\,\mathrm{polylog}\left(3,-\frac{be^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{ab^2d^3}+\frac{6(a^2+b^2)f^2(fx+e)\,\mathrm{polylog}\left(3,-\frac{be^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{ab^2d^3}+\frac{3f^3\,\mathrm{polylog}(4,e^{2dx+2c})}{4ad^4}$$
$$-\frac{6(a^2+b^2)f^3\,\mathrm{polylog}\left(4,-\frac{be^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{ab^2d^4}-\frac{6(a^2+b^2)f^3\,\mathrm{polylog}\left(4,-\frac{be^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{ab^2d^4}+\frac{6f^2(fx+e)\sinh(dx+c)}{bd^3}$$
$$+\frac{(fx+e)^3\sinh(dx+c)}{bd}$$

Result(type 8, 673 leaves):

$$-\frac{a\left(\frac{1}{4}x^4f^3+ef^2x^3+\frac{3}{2}e^2fx^2+e^3x\right)}{b^2}+\frac{(f^3x^3d^3+3d^3ef^2x^2+3d^3e^2fx-3d^2f^3x^2+e^3d^3-6d^2ef^2x-3d^2e^2f+6df^3x+6def^2-6f^3)e^{dx+c}}{2bd^4}$$
$$-\frac{f^3x^3d^3+3d^3ef^2x^2+3d^3e^2fx+3d^2f^3x^2+e^3d^3+6d^2ef^2x+3d^2e^2f+6df^3x+6def^2+6f^3}{2bd^4e^{dx+c}}+$$
$$\int\frac{1}{b^2\left(b(e^{dx+c})^4+2a(e^{dx+c})^3-2b(e^{dx+c})^2-2ae^{dx+c}+b\right)}\Big(2\big(a^2f^3x^3(e^{dx+c})^3+b^2f^3x^3(e^{dx+c})^3+3a^2ef^2x^2(e^{dx+c})^3-abf^3x^3(e^{dx+c})^2$$
$$+3b^2ef^2x^2(e^{dx+c})^3+3a^2e^2fx(e^{dx+c})^3-a^2f^3x^3e^{dx+c}-3abef^2x^2(e^{dx+c})^2+3b^2e^2fx(e^{dx+c})^3+b^2f^3x^3e^{dx+c}+a^2e^3(e^{dx+c})^3$$
$$-3a^2ef^2x^2e^{dx+c}-3abe^2fx(e^{dx+c})^2+abf^3x^3+b^2e^3(e^{dx+c})^3+3b^2ef^2x^2e^{dx+c}-3a^2e^2fxe^{dx+c}-abe^3(e^{dx+c})^2+3abef^2x^2$$
$$+3b^2e^2fxe^{dx+c}-a^2e^3e^{dx+c}+3abe^2fx+b^2e^3e^{dx+c}+be^3a\big)\Big)\,dx$$

Problem 115: Result more than twice size of optimal antiderivative.

$$\int\frac{(fx+e)\cosh(dx+c)^2\coth(dx+c)}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 4, 304 leaves, 22 steps):

$$-\frac{(fx+e)^2}{2af}+\frac{(a^2+b^2)(fx+e)^2}{2ab^2f}-\frac{f\cosh(dx+c)}{bd^2}+\frac{(fx+e)\ln(1-e^{2dx+2c})}{ad}-\frac{(a^2+b^2)(fx+e)\ln\left(1+\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{ab^2d}$$
$$-\frac{(a^2+b^2)(fx+e)\ln\left(1+\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{ab^2d}+\frac{f\operatorname{polylog}(2,e^{2dx+2c})}{2ad^2}-\frac{(a^2+b^2)f\operatorname{polylog}\left(2,-\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{ab^2d^2}$$
$$-\frac{(a^2+b^2)f\operatorname{polylog}\left(2,-\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{ab^2d^2}+\frac{(fx+e)\sinh(dx+c)}{bd}$$

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Result(type 4, 931 leaves):
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$$-\frac{ae\ln(b e^{2dx+2c}+2a e^{dx+c}-b)}{b^2d}-\frac{af\operatorname{dilog}\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)}{b^2d^2}-\frac{af\operatorname{dilog}\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)}{b^2d^2}+\frac{afc^2}{b^2d^2}+\frac{2ae\ln(e^{dx+c})}{b^2d}$$
$$+\frac{cf\ln(b e^{2dx+2c}+2a e^{dx+c}-b)}{d^2a}-\frac{f\ln\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)x}{da}-\frac{f\ln\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)c}{d^2a}-\frac{f\ln\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)x}{da}$$
$$-\frac{f\ln\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)c}{d^2a}+\frac{(dfx+de-f)e^{dx+c}}{2bd^2}-\frac{(dfx+de+f)e^{-dx-c}}{2bd^2}+\frac{afx^2}{2b^2}-\frac{aex}{b^2}+\frac{2afcx}{b^2d}-\frac{2afc\ln(e^{dx+c})}{b^2d^2}$$
$$+\frac{afc\ln(b e^{2dx+2c}+2a e^{dx+c}-b)}{b^2d^2}-\frac{af\ln\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)x}{b^2d}-\frac{af\ln\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)c}{b^2d^2}$$
$$-\frac{af\ln\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)x}{b^2d}-\frac{af\ln\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)c}{b^2d^2}+\frac{e\ln(e^{dx+c}-1)}{ad}+\frac{e\ln(1+e^{dx+c})}{ad}+\frac{\ln(1+e^{dx+c})fx}{ad}$$
$$-\frac{cf\ln(e^{dx+c}-1)}{ad^2}-\frac{f\operatorname{dilog}(e^{dx+c})}{ad^2}+\frac{f\operatorname{dilog}(1+e^{dx+c})}{ad^2}-\frac{f\operatorname{dilog}\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)}{d^2a}-\frac{f\operatorname{dilog}\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)}{d^2a}$$
$$-\frac{e\ln(b e^{2dx+2c}+2a e^{dx+c}-b)}{da}$$

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Problem 117: Unable to integrate problem.
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$$\int \frac{(fx+e)^2 \operatorname{csch}(dx+c) \operatorname{sech}(dx+c)}{a+b\sinh(dx+c)}\, dx$$

Optimal(type 4, 692 leaves, 33 steps):

$$-\frac{2b(fx+e)^2 \arctan(e^{dx+c})}{(a^2+b^2)d} - \frac{2(fx+e)^2 \operatorname{arctanh}(e^{2dx+2c})}{ad} + \frac{b^2(fx+e)^2 \ln(1+e^{2dx+2c})}{a(a^2+b^2)d} - \frac{b^2(fx+e)^2 \ln\left(1+\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{a(a^2+b^2)d}$$
$$-\frac{b^2(fx+e)^2 \ln\left(1+\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a(a^2+b^2)d} + \frac{2Ibf^2 \operatorname{polylog}(3, I e^{dx+c})}{(a^2+b^2)d^3} - \frac{2Ibf(fx+e)\operatorname{polylog}(2, I e^{dx+c})}{(a^2+b^2)d^2} + \frac{b^2 f(fx+e)\operatorname{polylog}(2, -e^{2dx+2c})}{a(a^2+b^2)d^2}$$
$$-\frac{f(fx+e)\operatorname{polylog}(2, -e^{2dx+2c})}{ad^2} + \frac{f(fx+e)\operatorname{polylog}(2, e^{2dx+2c})}{ad^2} - \frac{2b^2 f(fx+e)\operatorname{polylog}\left(2, -\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{a(a^2+b^2)d^2}$$
$$-\frac{2b^2 f(fx+e)\operatorname{polylog}\left(2, -\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a(a^2+b^2)d^2} - \frac{2Ibf^2 \operatorname{polylog}(3, -I e^{dx+c})}{(a^2+b^2)d^3} + \frac{2Ibf(fx+e)\operatorname{polylog}(2, -I e^{dx+c})}{(a^2+b^2)d^2} - \frac{b^2 f^2 \operatorname{polylog}(3, -e^{2dx+2c})}{2a(a^2+b^2)d^3}$$
$$+\frac{f^2 \operatorname{polylog}(3, -e^{2dx+2c})}{2ad^3} - \frac{f^2 \operatorname{polylog}(3, e^{2dx+2c})}{2ad^3} + \frac{2b^2 f^2 \operatorname{polylog}\left(3, -\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{a(a^2+b^2)d^3} + \frac{2b^2 f^2 \operatorname{polylog}\left(3, -\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a(a^2+b^2)d^3}$$

Result(type 8, 34 leaves):

$$\int \frac{(fx+e)^2 \operatorname{csch}(dx+c) \operatorname{sech}(dx+c)}{a+b\sinh(dx+c)}\, dx$$

Problem 118: Result more than twice size of optimal antiderivative.

$$\int \frac{(fx+e) \operatorname{csch}(dx+c) \operatorname{sech}(dx+c)}{a+b\sinh(dx+c)}\, dx$$

Optimal(type 4, 411 leaves, 26 steps):

$$-\frac{2b(fx+e) \arctan(e^{dx+c})}{(a^2+b^2)d} - \frac{2(fx+e) \operatorname{arctanh}(e^{2dx+2c})}{ad} + \frac{b^2(fx+e) \ln(1+e^{2dx+2c})}{a(a^2+b^2)d} - \frac{b^2(fx+e) \ln\left(1+\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{a(a^2+b^2)d}$$
$$-\frac{b^2(fx+e) \ln\left(1+\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a(a^2+b^2)d} + \frac{Ibf\operatorname{polylog}(2, -I e^{dx+c})}{(a^2+b^2)d^2} - \frac{Ibf\operatorname{polylog}(2, I e^{dx+c})}{(a^2+b^2)d^2} + \frac{b^2 f\operatorname{polylog}(2, -e^{2dx+2c})}{2a(a^2+b^2)d^2}$$

$$-\frac{f\operatorname{polylog}(2,-e^{2dx+2c})}{2ad^2}+\frac{f\operatorname{polylog}(2,e^{2dx+2c})}{2ad^2}-\frac{b^2 f\operatorname{polylog}\left(2,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{a(a^2+b^2)d^2}-\frac{b^2 f\operatorname{polylog}\left(2,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a(a^2+b^2)d^2}$$

Result(type 4, 1064 leaves):

$$-\frac{fb^2\ln\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)x}{d(a^2+b^2)a}-\frac{fb^2\ln\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)c}{d^2(a^2+b^2)a}+\frac{cfb^2\ln(b\,e^{2dx+2c}+2a\,e^{dx+c}-b)}{d^2(a^2+b^2)a}$$
$$-\frac{fb^2\ln\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)x}{d(a^2+b^2)a}-\frac{fb^2\ln\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)c}{d^2(a^2+b^2)a}+\frac{4\,I f\ln(1+I\,e^{dx+c})\,b\,x}{d(4a^2+4b^2)}+\frac{4\,I f\ln(1+I\,e^{dx+c})\,b\,c}{d^2(4a^2+4b^2)}$$
$$-\frac{4\,I f\ln(1-I\,e^{dx+c})\,b\,x}{d(4a^2+4b^2)}-\frac{4\,I f\ln(1-I\,e^{dx+c})\,b\,c}{d^2(4a^2+4b^2)}+\frac{e\ln(e^{dx+c}-1)}{a\,d}+\frac{e\ln(1+e^{dx+c})}{a\,d}+\frac{\ln(1+e^{dx+c})fx}{a\,d}-\frac{cf\ln(e^{dx+c}-1)}{a\,d^2}$$
$$-\frac{f\operatorname{dilog}(e^{dx+c})}{a\,d^2}+\frac{f\operatorname{dilog}(1+e^{dx+c})}{a\,d^2}-\frac{4f\ln(1+I\,e^{dx+c})\,a\,x}{d(4a^2+4b^2)}-\frac{4f\ln(1+I\,e^{dx+c})\,a\,c}{d^2(4a^2+4b^2)}-\frac{4f\ln(1-I\,e^{dx+c})\,a\,x}{d(4a^2+4b^2)}-\frac{4f\ln(1-I\,e^{dx+c})\,a\,c}{d^2(4a^2+4b^2)}$$
$$+\frac{4cfa\ln(1+e^{2dx+2c})}{d^2(4a^2+4b^2)}-\frac{fb^2\operatorname{dilog}\left(\frac{-e^{dx+c}b+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)}{d^2(a^2+b^2)a}-\frac{fb^2\operatorname{dilog}\left(\frac{e^{dx+c}b+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)}{d^2(a^2+b^2)a}+\frac{8cfb\arctan(e^{dx+c})}{d^2(4a^2+4b^2)}$$
$$-\frac{eb^2\ln(b\,e^{2dx+2c}+2a\,e^{dx+c}-b)}{d(a^2+b^2)a}+\frac{4\,I f\operatorname{dilog}(1+I\,e^{dx+c})\,b}{d^2(4a^2+4b^2)}-\frac{4\,I f\operatorname{dilog}(1-I\,e^{dx+c})\,b}{d^2(4a^2+4b^2)}-\frac{4f\operatorname{dilog}(1-I\,e^{dx+c})\,a}{d^2(4a^2+4b^2)}-\frac{4f\operatorname{dilog}(1+I\,e^{dx+c})\,a}{d^2(4a^2+4b^2)}$$
$$-\frac{4ea\ln(1+e^{2dx+2c})}{d(4a^2+4b^2)}-\frac{8eb\arctan(e^{dx+c})}{d(4a^2+4b^2)}$$

Problem 121: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{csch}(dx+c)\operatorname{sech}(dx+c)^3}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 3, 156 leaves, 9 steps):

$$-\frac{b^3\arctan(\sinh(dx+c))}{(a^2+b^2)^2 d}-\frac{b\arctan(\sinh(dx+c))}{2(a^2+b^2)d}-\frac{a(a^2+2b^2)\ln(\cosh(dx+c))}{(a^2+b^2)^2 d}+\frac{\ln(\sinh(dx+c))}{a\,d}-\frac{b^4\ln(a+b\sinh(dx+c))}{a(a^2+b^2)^2 d}$$
$$+\frac{\operatorname{sech}(dx+c)^2(a-b\sinh(dx+c))}{2(a^2+b^2)d}$$

Result(type 3, 529 leaves):

$$\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^3 a^2 b}{d\left(a^4+2b^2a^2+b^4\right)\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}+\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^3 b^3}{d\left(a^4+2b^2a^2+b^4\right)\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}-\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a^3}{d\left(a^4+2b^2a^2+b^4\right)\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}$$
$$-\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a b^2}{d\left(a^4+2b^2a^2+b^4\right)\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right) a^2 b}{d\left(a^4+2b^2a^2+b^4\right)\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}$$
$$-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right) b^3}{d\left(a^4+2b^2a^2+b^4\right)\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)a^3}{d\left(a^4+2b^2a^2+b^4\right)}-\frac{2\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)b^2 a}{d\left(a^4+2b^2a^2+b^4\right)}$$
$$-\frac{\arctan\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a^2 b}{d\left(a^4+2b^2a^2+b^4\right)}-\frac{3\arctan\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)b^3}{d\left(a^4+2b^2a^2+b^4\right)}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{da}$$
$$-\frac{b^4\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{da\left(a^4+2b^2a^2+b^4\right)}$$

Problem 124: Unable to integrate problem.

$$\int\frac{(fx+e)^2\cosh(dx+c)\coth(dx+c)^2}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 4, 491 leaves, 37 steps):

$$\frac{b(fx+e)^3}{3a^2f}-\frac{\left(a^2+b^2\right)(fx+e)^3}{3a^2bf}-\frac{4f(fx+e)\operatorname{arctanh}\left(e^{dx+c}\right)}{ad^2}-\frac{(fx+e)^2\operatorname{csch}(dx+c)}{ad}-\frac{b(fx+e)^2\ln\left(1-e^{2dx+2c}\right)}{a^2d}$$
$$+\frac{\left(a^2+b^2\right)(fx+e)^2\ln\left(1+\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{a^2bd}+\frac{\left(a^2+b^2\right)(fx+e)^2\ln\left(1+\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a^2bd}-\frac{2f^2\operatorname{polylog}\left(2,-e^{dx+c}\right)}{ad^3}+\frac{2f^2\operatorname{polylog}\left(2,e^{dx+c}\right)}{ad^3}$$
$$-\frac{bf(fx+e)\operatorname{polylog}\left(2,e^{2dx+2c}\right)}{a^2d^2}+\frac{2\left(a^2+b^2\right)f(fx+e)\operatorname{polylog}\left(2,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{a^2bd^2}+\frac{2\left(a^2+b^2\right)f(fx+e)\operatorname{polylog}\left(2,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a^2bd^2}$$
$$+\frac{bf^2\operatorname{polylog}\left(3,e^{2dx+2c}\right)}{2a^2d^3}-\frac{2\left(a^2+b^2\right)f^2\operatorname{polylog}\left(3,-\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{a^2bd^3}-\frac{2\left(a^2+b^2\right)f^2\operatorname{polylog}\left(3,-\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a^2bd^3}$$

Result(type 8, 482 leaves):

$$\frac{\frac{1}{3}x^3f^2+efx^2+e^2x}{b}-\frac{2\left(x^2f^2+2efx+e^2\right)e^{dx+c}}{da\left(\left(e^{dx+c}\right)^2-1\right)}+\int -\frac{1}{a\left(\left(e^{dx+c}\right)^2-1\right)d\left(b\left(e^{dx+c}\right)^2+2ae^{dx+c}-b\right)b}\left(2\left(\left(e^{dx+c}\right)^3a^2df^2x^2+b^2df^2x^2\left(e^{dx+c}\right)^3\right.\right.$$
$$+2\left(e^{dx+c}\right)^3a^2defx-abdf^2x^2\left(e^{dx+c}\right)^2+2b^2defx\left(e^{dx+c}\right)^3+\left(e^{dx+c}\right)^3a^2de^2-e^{dx+c}a^2df^2x^2-2abdefx\left(e^{dx+c}\right)^2+b^2de^2\left(e^{dx+c}\right)^3$$
$$+b^2df^2x^2e^{dx+c}-2\left(e^{dx+c}\right)^3b^2f^2x-2e^{dx+c}a^2defx-abde^2\left(e^{dx+c}\right)^2+abdf^2x^2-4\left(e^{dx+c}\right)^2abf^2x+2b^2defxe^{dx+c}-2\left(e^{dx+c}\right)^3b^2ef$$
$$\left.\left.-e^{dx+c}a^2de^2+2abdefx-4\left(e^{dx+c}\right)^2abef+b^2de^2e^{dx+c}+2e^{dx+c}b^2f^2x+abde^2+2e^{dx+c}b^2ef\right)\right)dx$$

Problem 125: Result more than twice size of optimal antiderivative.

$$\int \frac{\cosh(dx+c)\coth(dx+c)^2}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 3, 59 leaves, 4 steps):

$$-\frac{\operatorname{csch}(dx+c)}{ad}-\frac{b\ln(\sinh(dx+c))}{a^2d}+\frac{\left(a^2+b^2\right)\ln(a+b\sinh(dx+c))}{a^2bd}$$

Result(type 3, 171 leaves):

$$\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{2da}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{db}-\frac{1}{2da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}-\frac{b\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{da^2}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{db}$$
$$+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{db}+\frac{b\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{da^2}$$

Problem 131: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{csch}(dx+c)^2\operatorname{sech}(dx+c)^3}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 3, 176 leaves, 9 steps):

$$-\frac{a\arctan(\sinh(dx+c))}{2\left(a^2+b^2\right)d}-\frac{a\left(a^2+2b^2\right)\arctan(\sinh(dx+c))}{\left(a^2+b^2\right)^2d}-\frac{\operatorname{csch}(dx+c)}{ad}+\frac{b\left(a^2+2b^2\right)\ln(\cosh(dx+c))}{\left(a^2+b^2\right)^2d}-\frac{b\ln(\sinh(dx+c))}{a^2d}$$
$$+\frac{b^5\ln(a+b\sinh(dx+c))}{a^2\left(a^2+b^2\right)^2d}-\frac{\operatorname{sech}(dx+c)^2\left(b+a\sinh(dx+c)\right)}{2\left(a^2+b^2\right)d}$$

Result(type 3, 477 leaves):

$$\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{2da}+\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^3a^3}{d\left(a^2+b^2\right)^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}+\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^3b^2a}{d\left(a^2+b^2\right)^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}+\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a^2b}{d\left(a^2+b^2\right)^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}$$

$$+\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 b^3}{d\left(a^2+b^2\right)^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a^3}{d\left(a^2+b^2\right)^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b^2 a}{d\left(a^2+b^2\right)^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)^2}$$

$$+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)a^2 b}{d\left(a^2+b^2\right)^2}+\frac{2\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)b^3}{d\left(a^2+b^2\right)^2}-\frac{3\arctan\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a^3}{d\left(a^2+b^2\right)^2}-\frac{5\arctan\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)b^2 a}{d\left(a^2+b^2\right)^2}$$

$$-\frac{1}{2\,d\,a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}-\frac{b\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d\,a^2}+\frac{b^5\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{d\left(a^2+b^2\right)^2 a^2}$$

Problem 132: Unable to integrate problem.

$$\int\frac{(fx+e)^3\coth(dx+c)\operatorname{csch}(dx+c)^2}{a+b\sinh(dx+c)}\,dx$$

Optimal(type 4, 709 leaves, 34 steps):

$$-\frac{3f(fx+e)^2}{2\,a\,d^2}+\frac{6\,b\,f(fx+e)^2\operatorname{arctanh}\left(e^{dx+c}\right)}{a^2 d^2}-\frac{3f(fx+e)^2\coth(dx+c)}{2\,a\,d^2}+\frac{b\,(fx+e)^3\operatorname{csch}(dx+c)}{a^2 d}-\frac{(fx+e)^3\operatorname{csch}(dx+c)^2}{2\,a\,d}$$

$$+\frac{3f^2(fx+e)\ln\left(1-e^{2dx+2c}\right)}{a\,d^3}+\frac{b^2(fx+e)^3\ln\left(1-e^{2dx+2c}\right)}{a^3 d}-\frac{b^2(fx+e)^3\ln\left(1+\frac{b\,e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{a^3 d}-\frac{b^2(fx+e)^3\ln\left(1+\frac{b\,e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a^3 d}$$

$$+\frac{6\,b\,f^2(fx+e)\operatorname{polylog}\left(2,-e^{dx+c}\right)}{a^2 d^3}-\frac{6\,b\,f^2(fx+e)\operatorname{polylog}\left(2,e^{dx+c}\right)}{a^2 d^3}+\frac{3f^3\operatorname{polylog}\left(2,e^{2dx+2c}\right)}{2\,a\,d^4}+\frac{3\,b^2 f(fx+e)^2\operatorname{polylog}\left(2,e^{2dx+2c}\right)}{2\,a^3 d^2}$$

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

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

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

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

Result(type 8, 741 leaves):

$$-\frac{1}{a^2 d^2 \left(\left(e^{dx+c}\right)^2-1\right)^2}\Big(-2 b d f^3 x^3 \left(e^{dx+c}\right)^3+2 a d f^3 x^3 \left(e^{dx+c}\right)^2-6 b d e f^2 x^2 \left(e^{dx+c}\right)^3+6 a d e f^2 x^2 \left(e^{dx+c}\right)^2-6 b d e^2 f x \left(e^{dx+c}\right)^3+2 b d f^3 x^3 e^{dx+c}$$
$$+6 a d e^2 f x \left(e^{dx+c}\right)^2+3 a f^3 x^2 \left(e^{dx+c}\right)^2-2 b d e^3 \left(e^{dx+c}\right)^3+6 b d e f^2 x^2 e^{dx+c}+2 a d e^3 \left(e^{dx+c}\right)^2+6 a e f^2 x \left(e^{dx+c}\right)^2+6 b d e^2 f x e^{dx+c}$$
$$+3 a e^2 f \left(e^{dx+c}\right)^2-3 a f^3 x^2+2 b d e^3 e^{dx+c}-6 a e f^2 x-3 a e^2 f\Big)+4\Bigg($$
$$\int \frac{1}{2 a^2 \left(\left(e^{dx+c}\right)^2-1\right) d^2 \left(b \left(e^{dx+c}\right)^2+2 a e^{dx+c}-b\right)}\Big(b^2 d^2 f^3 x^3 \left(e^{dx+c}\right)^3+3 b^2 d^2 e f^2 x^2 \left(e^{dx+c}\right)^3+3 b^2 d^2 e^2 f x \left(e^{dx+c}\right)^3+b^2 d^2 f^3 x^3 e^{dx+c}$$
$$-3 b^2 d f^3 x^2 \left(e^{dx+c}\right)^3-6 a b d f^3 x^2 \left(e^{dx+c}\right)^2+b^2 d^2 e^3 \left(e^{dx+c}\right)^3+3 b^2 d^2 e f^2 x^2 e^{dx+c}-6 b^2 d e f^2 x \left(e^{dx+c}\right)^3-12 a b d e f^2 x \left(e^{dx+c}\right)^2$$
$$+3 b^2 d^2 e^2 f x e^{dx+c}-3 b^2 d e^2 f \left(e^{dx+c}\right)^3+3 b^2 d f^3 x^2 e^{dx+c}-6 a b d e^2 f \left(e^{dx+c}\right)^2+3 a b f^3 x \left(e^{dx+c}\right)^2+b^2 d^2 e^3 e^{dx+c}+6 b^2 d e f^2 x e^{dx+c}$$
$$+6 a^2 f^3 x e^{dx+c}+3 a b e f^2 \left(e^{dx+c}\right)^2+3 b^2 d e^2 f e^{dx+c}+6 a^2 e f^2 e^{dx+c}-3 a b f^3 x-3 a b e f^2\Big)\, dx\Bigg)$$

Problem 134: Unable to integrate problem.

$$\int \frac{(fx+e)^3 \operatorname{csch}(dx+c)^3 \operatorname{sech}(dx+c)}{a+b\sinh(dx+c)}\, dx$$

Optimal(type 4, 1674 leaves, 87 steps):

$$\frac{3 I b^3 f (fx+e)^2 \operatorname{polylog}(2,-I e^{dx+c})}{a^2 (a^2+b^2) d^2}+\frac{6 I b^3 f^2 (fx+e) \operatorname{polylog}(3, I e^{dx+c})}{a^2 (a^2+b^2) d^3}-\frac{3 b^4 f (fx+e)^2 \operatorname{polylog}\left(2,-\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{a^3 (a^2+b^2) d^2}$$
$$-\frac{3 b^4 f (fx+e)^2 \operatorname{polylog}\left(2,-\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a^3 (a^2+b^2) d^2}+\frac{6 b^4 f^2 (fx+e) \operatorname{polylog}\left(3,-\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{a^3 (a^2+b^2) d^3}+\frac{6 b^4 f^2 (fx+e) \operatorname{polylog}\left(3,-\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a^3 (a^2+b^2) d^3}$$
$$+\frac{3 b^4 f (fx+e)^2 \operatorname{polylog}(2,-e^{2dx+2c})}{2 a^3 (a^2+b^2) d^2}-\frac{3 b^4 f^2 (fx+e) \operatorname{polylog}(3,-e^{2dx+2c})}{2 a^3 (a^2+b^2) d^3}+\frac{6 I b f^3 \operatorname{polylog}(4, I e^{dx+c})}{a^2 d^4}$$
$$-\frac{3 I b f (fx+e)^2 \operatorname{polylog}(2,-I e^{dx+c})}{a^2 d^2}-\frac{6 I b f^2 (fx+e) \operatorname{polylog}(3, I e^{dx+c})}{a^2 d^3}-\frac{6 I b^3 f^3 \operatorname{polylog}(4, I e^{dx+c})}{a^2 (a^2+b^2) d^4}+\frac{3 f^2 (fx+e) \ln(1-e^{2dx+2c})}{a d^3}$$
$$-\frac{6 b^4 f^3 \operatorname{polylog}\left(4,-\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{a^3 (a^2+b^2) d^4}-\frac{6 b^4 f^3 \operatorname{polylog}\left(4,-\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a^3 (a^2+b^2) d^4}+\frac{b^4 (fx+e)^3 \ln(1+e^{2dx+2c})}{a^3 (a^2+b^2) d}$$
$$-\frac{b^4 (fx+e)^3 \ln\left(1+\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{a^3 (a^2+b^2) d}-\frac{b^4 (fx+e)^3 \ln\left(1+\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a^3 (a^2+b^2) d}+\frac{3 b^2 f^2 (fx+e) \operatorname{polylog}(3,-e^{2dx+2c})}{2 a^3 d^3}$$

$$+\frac{3 b^{4} f^{3} \operatorname{polylog}\left(4,-\mathrm{e}^{2 d x+2 c}\right)}{4 a^{3}\left(a^{2}+b^{2}\right) d^{4}}-\frac{6 \mathrm{I} b f^{3} \operatorname{polylog}\left(4,-\mathrm{I} \mathrm{e}^{d x+c}\right)}{a^{2} d^{4}}+\frac{6 b f(f x+e)^{2} \operatorname{arctanh}\left(\mathrm{e}^{d x+c}\right)}{a^{2} d^{2}}+\frac{6 b f^{2}(f x+e) \operatorname{polylog}\left(2,-\mathrm{e}^{d x+c}\right)}{a^{2} d^{3}}$$

$$-\frac{6 b f^{2}(f x+e) \operatorname{polylog}\left(2, \mathrm{e}^{d x+c}\right)}{a^{2} d^{3}}+\frac{3 b^{2} f(f x+e)^{2} \operatorname{polylog}\left(2, \mathrm{e}^{2 d x+2 c}\right)}{2 a^{3} d^{2}}-\frac{3 b^{2} f^{2}(f x+e) \operatorname{polylog}\left(3, \mathrm{e}^{2 d x+2 c}\right)}{2 a^{3} d^{3}}-\frac{2 b^{3}(f x+e)^{3} \arctan\left(\mathrm{e}^{d x+c}\right)}{a^{2}\left(a^{2}+b^{2}\right) d}$$

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

$$+\frac{2(f x+e)^{3} \operatorname{arctanh}\left(\mathrm{e}^{2 d x+2 c}\right)}{a d}-\frac{(f x+e)^{3} \operatorname{coth}(d x+c)^{2}}{2 a d}+\frac{3 \mathrm{I} b f(f x+e)^{2} \operatorname{polylog}\left(2, \mathrm{I} \mathrm{e}^{d x+c}\right)}{a^{2} d^{2}}+\frac{6 \mathrm{I} b f^{2}(f x+e) \operatorname{polylog}\left(3,-\mathrm{I} \mathrm{e}^{d x+c}\right)}{a^{2} d^{3}}$$

$$+\frac{6 \mathrm{I} b^{3} f^{3} \operatorname{polylog}\left(4,-\mathrm{I} \mathrm{e}^{d x+c}\right)}{a^{2}\left(a^{2}+b^{2}\right) d^{4}}-\frac{3 \mathrm{I} b^{3} f(f x+e)^{2} \operatorname{polylog}\left(2, \mathrm{I} \mathrm{e}^{d x+c}\right)}{a^{2}\left(a^{2}+b^{2}\right) d^{2}}-\frac{6 \mathrm{I} b^{3} f^{2}(f x+e) \operatorname{polylog}\left(3,-\mathrm{I} \mathrm{e}^{d x+c}\right)}{a^{2}\left(a^{2}+b^{2}\right) d^{3}}-\frac{3 f(f x+e)^{2} \operatorname{coth}(d x+c)}{2 a d^{2}}$$

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

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

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

Result(type 8, 1015 leaves):

$$-\frac{1}{a^{2} d^{2}\left(\left(\mathrm{e}^{d x+c}\right)^{2}-1\right)^{2}}\left(-2 b d f^{3} x^{3}\left(\mathrm{e}^{d x+c}\right)^{3}+2 a d f^{3} x^{3}\left(\mathrm{e}^{d x+c}\right)^{2}-6 b d e f^{2} x^{2}\left(\mathrm{e}^{d x+c}\right)^{3}+6 a d e f^{2} x^{2}\left(\mathrm{e}^{d x+c}\right)^{2}-6 b d e^{2} f x\left(\mathrm{e}^{d x+c}\right)^{3}+2 b d f^{3} x^{3} \mathrm{e}^{d x+c}\right.$$

$$+6 a d e^{2} f x\left(\mathrm{e}^{d x+c}\right)^{2}+3 a f^{3} x^{2}\left(\mathrm{e}^{d x+c}\right)^{2}-2 b d e^{3}\left(\mathrm{e}^{d x+c}\right)^{3}+6 b d e f^{2} x^{2} \mathrm{e}^{d x+c}+2 a d e^{3}\left(\mathrm{e}^{d x+c}\right)^{2}+6 a e f^{2} x\left(\mathrm{e}^{d x+c}\right)^{2}+6 b d e^{2} f x \mathrm{e}^{d x+c}$$

$$\left.+3 a e^{2} f\left(\mathrm{e}^{d x+c}\right)^{2}-3 a f^{3} x^{2}+2 b d e^{3} \mathrm{e}^{d x+c}-6 a e f^{2} x-3 a e^{2} f\right)+16\left(\int\right.$$

$$-\frac{1}{8 a^{2}\left(\left(\mathrm{e}^{d x+c}\right)^{2}+1\right)\left(\left(\mathrm{e}^{d x+c}\right)^{2}-1\right) d^{2}\left(b\left(\mathrm{e}^{d x+c}\right)^{2}+2 a \mathrm{e}^{d x+c}-b\right)}\left(-3\left(\mathrm{e}^{d x+c}\right)^{4} a b f^{3} x-3\left(\mathrm{e}^{d x+c}\right)^{4} a b e f^{2}-3 b^{2} d e^{2} f \mathrm{e}^{d x+c}\right.$$

$$-b^{2} d^{2} f^{3} x^{3}\left(\mathrm{e}^{d x+c}\right)^{5}+4 a^{2} d^{2} f^{3} x^{3}\left(\mathrm{e}^{d x+c}\right)^{3}+3 b^{2} d f^{3} x^{2}\left(\mathrm{e}^{d x+c}\right)^{5}+3 b^{2} d e^{2} f\left(\mathrm{e}^{d x+c}\right)^{5}-2 b^{2} d^{2} f^{3} x^{3}\left(\mathrm{e}^{d x+c}\right)^{3}-b^{2} d^{2} f^{3} x^{3} \mathrm{e}^{d x+c}-3 b^{2} d f^{3} x^{2} \mathrm{e}^{d x+c}$$

$$-3 b^{2} d^{2} e f^{2} x^{2}\left(\mathrm{e}^{d x+c}\right)^{5}-3 b^{2} d^{2} e^{2} f x\left(\mathrm{e}^{d x+c}\right)^{5}+12 a^{2} d^{2} e f^{2} x^{2}\left(\mathrm{e}^{d x+c}\right)^{3}+6 a b d f^{3} x^{2}\left(\mathrm{e}^{d x+c}\right)^{4}+6 b^{2} d e f^{2} x\left(\mathrm{e}^{d x+c}\right)^{5}+12 a^{2} d^{2} e^{2} f x\left(\mathrm{e}^{d x+c}\right)^{3}$$

$$+6 a b d e^{2} f\left(\mathrm{e}^{d x+c}\right)^{4}+12 a b d e f^{2} x\left(\mathrm{e}^{d x+c}\right)^{4}+12 a b d e f^{2} x\left(\mathrm{e}^{d x+c}\right)^{2}+3 a b f^{3} x+3 a b e f^{2}-2 b^{2} d^{2} e^{3}\left(\mathrm{e}^{d x+c}\right)^{3}-b^{2} d^{2} e^{3} \mathrm{e}^{d x+c}-6 a^{2} f^{3} x \mathrm{e}^{d x+c}$$

$$-6 a^{2} e f^{2} \mathrm{e}^{d x+c}-b^{2} d^{2} e^{3}\left(\mathrm{e}^{d x+c}\right)^{5}+4 a^{2} d^{2} e^{3}\left(\mathrm{e}^{d x+c}\right)^{3}-6\left(\mathrm{e}^{d x+c}\right)^{3} a^{2} f^{3} x-6\left(\mathrm{e}^{d x+c}\right)^{3} a^{2} e f^{2}-6 b^{2} d^{2} e f^{2} x^{2}\left(\mathrm{e}^{d x+c}\right)^{3}-6 b^{2} d^{2} e^{2} f x\left(\mathrm{e}^{d x+c}\right)^{3}$$

$$\left.\left.+6 a b d f^{3} x^{2}\left(\mathrm{e}^{d x+c}\right)^{2}-3 b^{2} d^{2} e f^{2} x^{2} \mathrm{e}^{d x+c}-3 b^{2} d^{2} e^{2} f x \mathrm{e}^{d x+c}+6 a b d e^{2} f\left(\mathrm{e}^{d x+c}\right)^{2}-6 b^{2} d e f^{2} x \mathrm{e}^{d x+c}\right) \mathrm{d}x\right)$$

Problem 135: Result more than twice size of optimal antiderivative.

$$\int \frac{(f x+e) \operatorname{csch}(d x+c)^{3} \operatorname{sech}(d x+c)}{a+b \sinh(d x+c)}\, \mathrm{d}x$$

Optimal(type 4, 714 leaves, 49 steps):

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

$$- \frac{b^4 (fx+e) \ln\left(1+\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a^3 (a^2+b^2) d} - \frac{b^4 f \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a-\sqrt{a^2+b^2}}\right)}{a^3 (a^2+b^2) d^2} - \frac{b^4 f \operatorname{polylog}\left(2, -\frac{b e^{dx+c}}{a+\sqrt{a^2+b^2}}\right)}{a^3 (a^2+b^2) d^2} - \frac{I b f \operatorname{polylog}(2, -I e^{dx+c})}{a^2 d^2}$$

$$+ \frac{2 b f x \arctan(e^{dx+c})}{a^2 d} - \frac{2 b^3 (fx+e) \arctan(e^{dx+c})}{a^2 (a^2+b^2) d} - \frac{b f x \arctan(\sinh(dx+c))}{a^2 d} + \frac{I b f \operatorname{polylog}(2, I e^{dx+c})}{a^2 d^2} + \frac{b^4 f \operatorname{polylog}(2, -e^{2dx+2c})}{2 a^3 (a^2+b^2) d^2}$$

$$- \frac{(fx+e) \ln(\tanh(dx+c))}{a d} - \frac{f \coth(dx+c)}{2 a d^2} - \frac{(fx+e) \coth(dx+c)^2}{2 a d} + \frac{f \operatorname{polylog}(2, -e^{2dx+2c})}{2 a d^2} - \frac{f \operatorname{polylog}(2, e^{2dx+2c})}{2 a d^2} + \frac{f x}{2 a d}$$

$$+ \frac{b (fx+e) \arctan(\sinh(dx+c))}{a^2 d} + \frac{2 f x \operatorname{arctanh}(e^{2dx+2c})}{a d} - \frac{2 b^2 (fx+e) \operatorname{arctanh}(e^{2dx+2c})}{a^3 d} + \frac{b f \operatorname{arctanh}(\cosh(dx+c))}{a^2 d^2}$$

$$+ \frac{b (fx+e) \operatorname{csch}(dx+c)}{a^2 d} - \frac{b^2 f \operatorname{polylog}(2, -e^{2dx+2c})}{2 a^3 d^2} + \frac{b^2 f \operatorname{polylog}(2, e^{2dx+2c})}{2 a^3 d^2}$$

Result(type 4, 1477 leaves):

$$\frac{b^2 f \operatorname{arctanh}\left(\frac{2 e^{dx+c} b + 2a}{2\sqrt{a^2+b^2}}\right)}{d^2 (a^2+b^2)^{3/2}} + \frac{b^2 e \ln(1+e^{dx+c})}{a^3 d} + \frac{b^2 e \ln(e^{dx+c}-1)}{a^3 d} - \frac{b^2 f \operatorname{dilog}(e^{dx+c})}{a^3 d^2} + \frac{b^2 f \operatorname{dilog}(1+e^{dx+c})}{a^3 d^2} - \frac{b f \ln(e^{dx+c}-1)}{a^2 d^2}$$

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

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

$$- \frac{4 I f \ln(1+I e^{dx+c}) b x}{d (4a^2+4b^2)} + \frac{4 I f \ln(1 - I e^{dx+c}) b c}{d^2 (4a^2+4b^2)} - \frac{4 I f \ln(1+I e^{dx+c}) b c}{d^2 (4a^2+4b^2)} - \frac{\ln(1+e^{dx+c}) f x}{a d} + \frac{c f \ln(e^{dx+c}-1)}{a d^2} + \frac{f \operatorname{dilog}(e^{dx+c})}{a d^2}$$

$$- \frac{f \operatorname{dilog}(1+e^{dx+c})}{a d^2} - \frac{b^2 c f \ln(e^{dx+c}-1)}{a^3 d^2} + \frac{b^2 f \ln(1+e^{dx+c}) x}{a^3 d} - \frac{b^2 f \operatorname{arctanh}\left(\frac{2 e^{dx+c} b + 2a}{2\sqrt{a^2+b^2}}\right)}{a^2 d^2 \sqrt{a^2+b^2}} + \frac{b^4 f \operatorname{arctanh}\left(\frac{2 e^{dx+c} b + 2a}{2\sqrt{a^2+b^2}}\right)}{a^2 d^2 (a^2+b^2)^{3/2}}$$

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

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

$$-\frac{-2\,b\,d\,f\,x\,e^{3\,dx+3\,c}+2\,a\,d\,f\,x\,e^{2\,dx+2\,c}-2\,b\,d\,e\,e^{3\,dx+3\,c}+2\,a\,d\,e\,e^{2\,dx+2\,c}+2\,b\,d\,f\,x\,e^{dx+c}+a\,f\,e^{2\,dx+2\,c}+2\,b\,d\,e\,e^{dx+c}-a\,f}{d^2 a^2 (e^{2\,dx+2\,c}-1)^2}+\frac{4\,f\ln(1+\mathrm{I}\,e^{dx+c})\,a\,x}{d\,(4\,a^2+4\,b^2)}$$

$$+\frac{4\,f\ln(1+\mathrm{I}\,e^{dx+c})\,a\,c}{d^2 (4\,a^2+4\,b^2)}+\frac{4\,f\ln(1-\mathrm{I}\,e^{dx+c})\,a\,x}{d\,(4\,a^2+4\,b^2)}+\frac{4\,f\ln(1-\mathrm{I}\,e^{dx+c})\,a\,c}{d^2 (4\,a^2+4\,b^2)}-\frac{4\,c\,f\,a\ln(1+e^{2\,dx+2\,c})}{d^2 (4\,a^2+4\,b^2)}-\frac{8\,c\,f\,b\arctan(e^{dx+c})}{d^2 (4\,a^2+4\,b^2)}$$

$$+\frac{4\,f\operatorname{dilog}(1-\mathrm{I}\,e^{dx+c})\,a}{d^2 (4\,a^2+4\,b^2)}+\frac{4\,f\operatorname{dilog}(1+\mathrm{I}\,e^{dx+c})\,a}{d^2 (4\,a^2+4\,b^2)}+\frac{4\,e\,a\ln(1+e^{2\,dx+2\,c})}{d\,(4\,a^2+4\,b^2)}+\frac{8\,e\,b\arctan(e^{dx+c})}{d\,(4\,a^2+4\,b^2)}$$

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Test results for the 30 problems in "6.1.3 (e x)^m (a+b sinh(c+d x^n))^p.txt"
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Problem 12: Result more than twice size of optimal antiderivative.
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$$\int \frac{\sinh\left(a+\frac{b}{x}\right)}{x^4}\,dx$$

```
Optimal(type 3, 46 leaves, 4 steps):
```

$$-\frac{2\cosh\left(a+\frac{b}{x}\right)}{b^3}-\frac{\cosh\left(a+\frac{b}{x}\right)}{b\,x^2}+\frac{2\sinh\left(a+\frac{b}{x}\right)}{b^2 x}$$

```
Result(type 3, 93 leaves):
```

$$-\frac{\left(a+\frac{b}{x}\right)^2\cosh\left(a+\frac{b}{x}\right)-2\left(a+\frac{b}{x}\right)\sinh\left(a+\frac{b}{x}\right)+2\cosh\left(a+\frac{b}{x}\right)-2\,a\left(\left(a+\frac{b}{x}\right)\cosh\left(a+\frac{b}{x}\right)-\sinh\left(a+\frac{b}{x}\right)\right)+a^2\cosh\left(a+\frac{b}{x}\right)}{b^3}$$

```
Problem 13: Result unnecessarily involves higher level functions.
```

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

```
Optimal(type 4, 61 leaves, 4 steps):
```

$$-\frac{b\,e^a\left(-\frac{b}{x}\right)^m (e\,x)^m\,\Gamma\left(-1-m,-\frac{b}{x}\right)}{2}-\frac{b\left(\frac{b}{x}\right)^m (e\,x)^m\,\Gamma\left(-1-m,\frac{b}{x}\right)}{2\,e^a}$$

```
Result(type 5, 69 leaves):
```

$$\frac{(e\,x)^m\,b\operatorname{hypergeom}\left(\left[-\frac{m}{2}\right],\left[\frac{3}{2},1-\frac{m}{2}\right],\frac{b^2}{4\,x^2}\right)\cosh(a)}{m}+\frac{(e\,x)^m\,x\operatorname{hypergeom}\left(\left[-\frac{m}{2}-\frac{1}{2}\right],\left[\frac{1}{2},\frac{1}{2}-\frac{m}{2}\right],\frac{b^2}{4\,x^2}\right)\sinh(a)}{1+m}$$

Problem 19: Result unnecessarily involves higher level functions.

$$\int x \sinh\left(a + b x^n\right) \, dx$$

Optimal(type 4, 73 leaves, 3 steps):

$$-\frac{e^a x^2 \Gamma\left(\frac{2}{n}, -b x^n\right)}{2 n \left(-b x^n\right)^{\frac{2}{n}}} + \frac{x^2 \Gamma\left(\frac{2}{n}, b x^n\right)}{2 e^a n \left(b x^n\right)^{\frac{2}{n}}}$$

Result(type 5, 68 leaves):

$$\frac{x^2 \operatorname{hypergeom}\left(\left[\frac{1}{n}\right], \left[\frac{1}{2}, 1 + \frac{1}{n}\right], \frac{x^{2n} b^2}{4}\right) \sinh(a)}{2} + \frac{x^{n+2} b \operatorname{hypergeom}\left(\left[\frac{1}{2} + \frac{1}{n}\right], \left[\frac{3}{2}, \frac{3}{2} + \frac{1}{n}\right], \frac{x^{2n} b^2}{4}\right) \cosh(a)}{n+2}$$

Problem 20: Unable to integrate problem.

$$\int x^2 \sinh\left(a + b x^n\right)^2 \, dx$$

Optimal(type 4, 101 leaves, 5 steps):

$$-\frac{x^3}{6} - \frac{2^{-2-\frac{3}{n}} e^{2a} x^3 \Gamma\left(\frac{3}{n}, -2 b x^n\right)}{n \left(-b x^n\right)^{\frac{3}{n}}} - \frac{2^{-2-\frac{3}{n}} x^3 \Gamma\left(\frac{3}{n}, 2 b x^n\right)}{e^{2a} n \left(b x^n\right)^{\frac{3}{n}}}$$

Result(type 8, 16 leaves):

$$\int x^2 \sinh\left(a + b x^n\right)^2 \, dx$$

Problem 21: Unable to integrate problem.

$$\int x \sinh\left(a + b x^n\right)^2 \, dx$$

Optimal(type 4, 101 leaves, 5 steps):

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

Result(type 8, 14 leaves):

$$\int x \sinh\left(a + b x^n\right)^2 \, dx$$

Problem 22: Unable to integrate problem.

$$\int \sinh(a+b x^n)^2\, dx$$

Optimal(type 4, 87 leaves, 5 steps):

$$-\frac{x}{2}-\frac{2^{-2-\frac{1}{n}} e^{2 a} x \Gamma\left(\frac{1}{n}, -2 b x^n\right)}{n \left(-b x^n\right)^{\frac{1}{n}}}-\frac{2^{-2-\frac{1}{n}} x \Gamma\left(\frac{1}{n}, 2 b x^n\right)}{e^{2 a} n \left(b x^n\right)^{\frac{1}{n}}}$$

Result(type 8, 12 leaves):

$$\int \sinh(a+b x^n)^2\, dx$$

Problem 23: Unable to integrate problem.

$$\int x \sinh(a+b x^n)^3\, dx$$

Optimal(type 4, 164 leaves, 8 steps):

$$-\frac{e^{3 a} x^2 \Gamma\left(\frac{2}{n}, -3 b x^n\right)}{8\, 9^{\frac{1}{n}} n \left(-b x^n\right)^{\frac{2}{n}}}+\frac{3 e^{a} x^2 \Gamma\left(\frac{2}{n}, -b x^n\right)}{8 n \left(-b x^n\right)^{\frac{2}{n}}}-\frac{3 x^2 \Gamma\left(\frac{2}{n}, b x^n\right)}{8 e^{a} n \left(b x^n\right)^{\frac{2}{n}}}+\frac{x^2 \Gamma\left(\frac{2}{n}, 3 b x^n\right)}{8\, 9^{\frac{1}{n}} e^{3 a} n \left(b x^n\right)^{\frac{2}{n}}}$$

Result(type 8, 14 leaves):

$$\int x \sinh(a+b x^n)^3\, dx$$

Problem 24: Unable to integrate problem.

$$\int (e x)^m \sinh(a+b x^n)^3\, dx$$

Optimal(type 4, 216 leaves, 8 steps):

$$-\frac{e^{3 a} (e x)^{1+m} \Gamma\left(\frac{1+m}{n}, -3 b x^n\right)}{8\, 3^{\frac{1+m}{n}} e n \left(-b x^n\right)^{\frac{1+m}{n}}}+\frac{3 e^{a} (e x)^{1+m} \Gamma\left(\frac{1+m}{n}, -b x^n\right)}{8 e n \left(-b x^n\right)^{\frac{1+m}{n}}}-\frac{3 (e x)^{1+m} \Gamma\left(\frac{1+m}{n}, b x^n\right)}{8 e e^{a} n \left(b x^n\right)^{\frac{1+m}{n}}}+\frac{(e x)^{1+m} \Gamma\left(\frac{1+m}{n}, 3 b x^n\right)}{8\, 3^{\frac{1+m}{n}} e e^{3 a} n \left(b x^n\right)^{\frac{1+m}{n}}}$$

Result(type 8, 18 leaves):

$$\int (e x)^m \sinh(a+b x^n)^3\, dx$$

Problem 25: Unable to integrate problem.

$$\int (e x)^m \sinh(a+b x^n)^2\, dx$$

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

$$-\frac{(e x)^{1+m}}{2 e (1+m)}-\frac{e^{2 a}(e x)^{1+m}\Gamma\left(\frac{1+m}{n},-2 b x^n\right)}{2^{\frac{1+m+2 n}{n}} e n\left(-b x^n\right)^{\frac{1+m}{n}}}-\frac{(e x)^{1+m}\Gamma\left(\frac{1+m}{n},2 b x^n\right)}{2^{\frac{1+m+2 n}{n}} e e^{2 a} n\left(b x^n\right)^{\frac{1+m}{n}}}$$

Result(type 8, 18 leaves):

$$\int (e x)^m \sinh\left(a+b x^n\right)^2 dx$$

Problem 29: Unable to integrate problem.

$$\int \frac{\sinh\left(a+b (d x+c)^{1/3}\right)}{x} dx$$

Optimal(type 4, 180 leaves, 13 steps):

$$-\cosh\left(a+b c^{1/3}\right) \mathrm{Shi}\left(b\left(c^{1/3}-(d x+c)^{1/3}\right)\right)-\cosh\left(a+(-1)^{2/3} b c^{1/3}\right) \mathrm{Shi}\left(b\left((-1)^{2/3} c^{1/3}-(d x+c)^{1/3}\right)\right)+\cosh\left(a-(-1)^{1/3} b c^{1/3}\right) \mathrm{Shi}\left(b\left((-1)^{1/3} c^{1/3}+(d x+c)^{1/3}\right)\right)+\mathrm{Chi}\left(b\left(c^{1/3}-(d x+c)^{1/3}\right)\right) \sinh\left(a+b c^{1/3}\right)+\mathrm{Chi}\left(b\left((-1)^{1/3} c^{1/3}+(d x+c)^{1/3}\right)\right) \sinh\left(a-(-1)^{1/3} b c^{1/3}\right)+\mathrm{Chi}\left(-b\left((-1)^{2/3} c^{1/3}-(d x+c)^{1/3}\right)\right) \sinh\left(a+(-1)^{2/3} b c^{1/3}\right)$$

Result(type 8, 18 leaves):

$$\int \frac{\sinh\left(a+b (d x+c)^{1/3}\right)}{x} dx$$

Problem 30: Unable to integrate problem.

$$\int \frac{\sinh\left(a+b (d x+c)^{1/3}\right)}{x^2} dx$$

Optimal(type 4, 243 leaves, 14 steps):

$$\frac{b d \mathrm{Chi}\left(b\left(c^{1/3}-(d x+c)^{1/3}\right)\right) \cosh\left(a+b c^{1/3}\right)}{3 c^{2/3}}-\frac{(-1)^{1/3} b d \mathrm{Chi}\left(b\left((-1)^{1/3} c^{1/3}+(d x+c)^{1/3}\right)\right) \cosh\left(a-(-1)^{1/3} b c^{1/3}\right)}{3 c^{2/3}}+\frac{(-1)^{2/3} b d \mathrm{Chi}\left(-b\left((-1)^{2/3} c^{1/3}-(d x+c)^{1/3}\right)\right) \cosh\left(a+(-1)^{2/3} b c^{1/3}\right)}{3 c^{2/3}}-\frac{b d \mathrm{Shi}\left(b\left(c^{1/3}-(d x+c)^{1/3}\right)\right) \sinh\left(a+b c^{1/3}\right)}{3 c^{2/3}}-\frac{(-1)^{1/3} b d \mathrm{Shi}\left(b\left((-1)^{1/3} c^{1/3}+(d x+c)^{1/3}\right)\right) \sinh\left(a-(-1)^{1/3} b c^{1/3}\right)}{3 c^{2/3}}-\frac{(-1)^{2/3} b d \mathrm{Shi}\left(b\left((-1)^{2/3} c^{1/3}-(d x+c)^{1/3}\right)\right) \sinh\left(a+(-1)^{2/3} b c^{1/3}\right)}{3 c^{2/3}}-\frac{\sinh\left(a+b (d x+c)^{1/3}\right)}{x}$$

Result(type 8, 18 leaves):

$$\int \frac{\sinh\left(a+b (d x+c)^{1/3}\right)}{x^2} dx$$

Test results for the 11 problems in "6.1.4 (d+e x)^m sinh(a+b x+c x^2)^n.txt"

Problem 4: Unable to integrate problem.

$$\int \left(-\frac{b \cosh(-c x^2 + b x + a)}{x} + \frac{\sinh(-c x^2 + b x + a)}{x^2} \right) dx$$

Optimal(type 4, 82 leaves, 7 steps):

$$-\frac{\sinh(-c x^2 + b x + a)}{x} + \frac{e^{a + \frac{b^2}{4 c}} \operatorname{erf}\left(\frac{-2 c x + b}{2 \sqrt{c}} \right) \sqrt{c}\, \sqrt{\pi}}{2} + \frac{e^{-a - \frac{b^2}{4 c}} \operatorname{erfi}\left(\frac{-2 c x + b}{2 \sqrt{c}} \right) \sqrt{c}\, \sqrt{\pi}}{2}$$

Result(type 8, 37 leaves):

$$\int \left(-\frac{b \cosh(-c x^2 + b x + a)}{x} + \frac{\sinh(-c x^2 + b x + a)}{x^2} \right) dx$$

Problem 11: Result more than twice size of optimal antiderivative.

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

Optimal(type 4, 100 leaves, 6 steps):

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

Result(type 4, 210 leaves):

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

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

Test results for the 100 problems in "6.1.5 Hyperbolic sine functions.txt"

Problem 12: Unable to integrate problem.

$$\int \frac{1}{(b \sinh(d x + c))^{2/3}}\, dx$$

Optimal(type 5, 50 leaves, 1 step):

$$\frac{3 \cosh(d x + c) \operatorname{hypergeom}\left(\left[\frac{1}{6}, \frac{1}{2}\right], \left[\frac{7}{6}\right], -\sinh(d x + c)^2\right) (b \sinh(d x + c))^{1/3}}{b d \sqrt{\cosh(d x + c)^2}}$$

Result(type 8, 12 leaves):

$$\int \frac{1}{(b \sinh(d x + c))^{2/3}}\, dx$$

Problem 13: Unable to integrate problem.

$$\int (-I \sinh(d x + c))^n\, dx$$

Optimal(type 5, 64 leaves, 1 step):

$$\frac{I \cosh(d x + c) \operatorname{hypergeom}\left(\left[\frac{1}{2}, \frac{n}{2} + \frac{1}{2}\right], \left[\frac{3}{2} + \frac{n}{2}\right], -\sinh(d x + c)^2\right) (-I \sinh(d x + c))^{n+1}}{d (n + 1) \sqrt{\cosh(d x + c)^2}}$$

Result(type 8, 13 leaves):

$$\int (-I \sinh(d x + c))^n\, dx$$

Problem 14: Result more than twice size of optimal antiderivative.

$$\int \frac{\sinh(x)^3}{I + \sinh(x)}\, dx$$

Optimal(type 3, 30 leaves, 2 steps):

$$-\frac{3 x}{2} - 2 I \cosh(x) + \frac{3 \cosh(x) \sinh(x)}{2} - \frac{\cosh(x) \sinh(x)^2}{I + \sinh(x)}$$

Result(type 3, 92 leaves):

$$\frac{1}{2 \left(\tanh\left(\frac{x}{2}\right) - 1\right)} + \frac{I}{\tanh\left(\frac{x}{2}\right) - 1} + \frac{1}{2 \left(\tanh\left(\frac{x}{2}\right) - 1\right)^2} + \frac{3 \ln\left(\tanh\left(\frac{x}{2}\right) - 1\right)}{2} + \frac{2}{\tanh\left(\frac{x}{2}\right) + I} + \frac{1}{2 \left(\tanh\left(\frac{x}{2}\right) + 1\right)} - \frac{I}{\tanh\left(\frac{x}{2}\right) + 1}$$
$$- \frac{1}{2 \left(\tanh\left(\frac{x}{2}\right) + 1\right)^2} - \frac{3 \ln\left(\tanh\left(\frac{x}{2}\right) + 1\right)}{2}$$

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

$$\int \frac{\sinh(x)^3}{(I + \sinh(x))^2}\, dx$$

Optimal(type 3, 36 leaves, 6 steps):

$$-2 I x+\frac{4 \cosh (x)}{3}-\frac{\cosh (x) \sinh (x)^2}{3(I+\sinh (x))^2}+\frac{2 I \cosh (x)}{I+\sinh (x)}$$

Result(type 3, 74 leaves):

$$2 I \ln \left(\tanh \left(\frac{x}{2}\right)-1\right)-\frac{1}{\tanh \left(\frac{x}{2}\right)-1}+\frac{4 I}{3\left(\tanh \left(\frac{x}{2}\right)+I\right)^3}+\frac{4 I}{\tanh \left(\frac{x}{2}\right)+I}-\frac{2}{\left(\tanh \left(\frac{x}{2}\right)+I\right)^2}-2 I \ln \left(\tanh \left(\frac{x}{2}\right)+1\right)+\frac{1}{\tanh \left(\frac{x}{2}\right)+1}$$

Problem 20: Unable to integrate problem.

$$\int \frac{\sinh (x)}{\sqrt{a+I a \sinh (x)}} \, dx$$

Optimal(type 3, 44 leaves, 3 steps):

$$-\frac{\operatorname{arctanh}\left(\frac{\cosh (x) \sqrt{a} \sqrt{2}}{2 \sqrt{a+I a \sinh (x)}}\right) \sqrt{2}}{\sqrt{a}}+\frac{2 \cosh (x)}{\sqrt{a+I a \sinh (x)}}$$

Result(type 8, 113 leaves):

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

Problem 21: Unable to integrate problem.

$$\int \frac{\sinh (x)}{\sqrt{a-I a \sinh (x)}} \, dx$$

Optimal(type 3, 44 leaves, 3 steps):

$$-\frac{\operatorname{arctanh}\left(\frac{\cosh (x) \sqrt{a} \sqrt{2}}{2 \sqrt{a-I a \sinh (x)}}\right) \sqrt{2}}{\sqrt{a}}+\frac{2 \cosh (x)}{\sqrt{a-I a \sinh (x)}}$$

Result(type 8, 117 leaves):

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

Problem 22: Unable to integrate problem.

$$\int (a+\mathrm{I}\,a\sinh(dx+c))^{5/2}\,dx$$

Optimal(type 3, 86 leaves, 3 steps):

$$\frac{2\,\mathrm{I}\,a\cosh(dx+c)\,(a+\mathrm{I}\,a\sinh(dx+c))^{3/2}}{5\,d}+\frac{64\,\mathrm{I}\,a^3\cosh(dx+c)}{15\,d\sqrt{a+\mathrm{I}\,a\sinh(dx+c)}}+\frac{16\,\mathrm{I}\,a^2\cosh(dx+c)\sqrt{a+\mathrm{I}\,a\sinh(dx+c)}}{15\,d}$$

Result(type 8, 16 leaves):

$$\int (a+\mathrm{I}\,a\sinh(dx+c))^{5/2}\,dx$$

Problem 23: Unable to integrate problem.

$$\int \frac{1}{(a+\mathrm{I}\,a\sinh(dx+c))^{3/2}}\,dx$$

Optimal(type 3, 68 leaves, 3 steps):

$$\frac{\mathrm{I}\cosh(dx+c)}{2\,d\,(a+\mathrm{I}\,a\sinh(dx+c))^{3/2}}+\frac{\mathrm{I}\,\mathrm{arctanh}\left(\frac{\cosh(dx+c)\sqrt{a}\,\sqrt{2}}{2\sqrt{a+\mathrm{I}\,a\sinh(dx+c)}}\right)\sqrt{2}}{4\,a^{3/2}\,d}$$

Result(type 8, 16 leaves):

$$\int \frac{1}{(a+\mathrm{I}\,a\sinh(dx+c))^{3/2}}\,dx$$

Problem 31: Unable to integrate problem.

$$\int (a+\mathrm{I}\,a\sinh(x))^{3/2}\,(A+B\sinh(x))\,dx$$

Optimal(type 3, 64 leaves, 3 steps):

$$\frac{2\,B\cosh(x)\,(a+\mathrm{I}\,a\sinh(x))^{3/2}}{5}+\frac{8\,a^2\,(5\,\mathrm{I}\,A+3\,B)\cosh(x)}{15\sqrt{a+\mathrm{I}\,a\sinh(x)}}+\frac{2\,a\,(5\,\mathrm{I}\,A+3\,B)\cosh(x)\sqrt{a+\mathrm{I}\,a\sinh(x)}}{15}$$

Result(type 8, 19 leaves):

$$\int (a+\mathrm{I}\,a\sinh(x))^{3/2}\,(A+B\sinh(x))\,dx$$

Problem 37: Unable to integrate problem.

$$\int \frac{A+B\sinh(x)}{(a+\mathrm{I}\,a\sinh(x))^{3/2}}\,dx$$

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

$$\frac{(IA-B)\cosh(x)}{2\,(a+Ia\sinh(x))^{3/2}}+\frac{(IA+3B)\,\mathrm{arctanh}\left(\frac{\cosh(x)\sqrt{a}\,\sqrt{2}}{2\sqrt{a+Ia\sinh(x)}}\right)\sqrt{2}}{4\,a^{3/2}}$$

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Result(type 8, 19 leaves):
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$$\int\frac{A+B\sinh(x)}{(a+Ia\sinh(x))^{3/2}}\,dx$$

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Problem 38: Result more than twice size of optimal antiderivative.
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$$\int(a+b\sinh(x))^{5/2}\,(A+B\sinh(x))\,dx$$

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Optimal(type 4, 279 leaves, 8 steps):
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$$\frac{2\,(7Ab+5aB)\cosh(x)\,(a+b\sinh(x))^{3/2}}{35}+\frac{2B\cosh(x)\,(a+b\sinh(x))^{5/2}}{7}+\frac{2\left(56aAb+15a^2B-25b^2B\right)\cosh(x)\sqrt{a+b\sinh(x)}}{105}$$

$$+\frac{2I\left(161a^2Ab-63Ab^3+15a^3B-145ab^2B\right)\sqrt{\sin\left(\frac{\pi}{4}+\frac{Ix}{2}\right)^2}\,\mathrm{EllipticE}\left(\cos\left(\frac{\pi}{4}+\frac{Ix}{2}\right),\sqrt{2}\sqrt{\frac{b}{Ia+b}}\right)\sqrt{a+b\sinh(x)}}{105\sin\left(\frac{\pi}{4}+\frac{Ix}{2}\right)b\sqrt{\frac{a+b\sinh(x)}{a-Ib}}}$$

$$-\frac{2I\left(a^2+b^2\right)\left(56aAb+15a^2B-25b^2B\right)\sqrt{\sin\left(\frac{\pi}{4}+\frac{Ix}{2}\right)^2}\,\mathrm{EllipticF}\left(\cos\left(\frac{\pi}{4}+\frac{Ix}{2}\right),\sqrt{2}\sqrt{\frac{b}{Ia+b}}\right)\sqrt{\frac{a+b\sinh(x)}{a-Ib}}}{105\sin\left(\frac{\pi}{4}+\frac{Ix}{2}\right)b\sqrt{a+b\sinh(x)}}$$

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Result(type 4, 1892 leaves):
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$$\frac{1}{105b^2\cosh(x)\sqrt{a+b\sinh(x)}}\Bigg(2\Bigg(63A\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticE}\left(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},\sqrt{-\frac{Ib-a}{Ib+a}}\right)\sqrt{\frac{(I-\sinh(x))b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))b}{Ib-a}}\,b^5$$

$$-15B\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticE}\left(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},\sqrt{-\frac{Ib-a}{Ib+a}}\right)\sqrt{\frac{(I-\sinh(x))b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))b}{Ib-a}}\,a^5$$

$$-63A\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticF}\left(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},\sqrt{-\frac{Ib-a}{Ib+a}}\right)\sqrt{\frac{(I-\sinh(x))b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))b}{Ib-a}}\,b^5+15Bb^5\sinh(x)^5+21Ab^5\sinh(x)^4$$

$$-10Bb^5\sinh(x)^3+21Ab^5\sinh(x)^2-25Bb^5\sinh(x)+60Bab^4\sinh(x)^4+98Aab^4\sinh(x)^3+90Ba^2b^3\sinh(x)^3+77Aa^2b^3\sinh(x)^2$$

$$+45Ba^3b^2\sinh(x)^2+35Bab^4\sinh(x)^2+98Aab^4\sinh(x)+90Ba^2b^3\sinh(x)+15IB\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticF}\Bigg(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},$$

$$\sqrt{-\frac{Ib-a}{Ib+a}}\Bigg)\sqrt{\frac{(I-\sinh(x))b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))b}{Ib-a}}\,a^4b-10IB\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticF}\Bigg(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},$$

$$\sqrt{-\frac{Ib-a}{Ib+a}}\Bigg)\sqrt{\frac{(I-\sinh(x))\,b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))\,b}{Ib-a}}\,a^2 b^3 + 56\,I\,A\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticF}\Bigg(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},$$

$$\sqrt{-\frac{Ib-a}{Ib+a}}\Bigg)\sqrt{\frac{(I-\sinh(x))\,b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))\,b}{Ib-a}}\,a^3 b^2 - 25\,I\,B\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticF}\Bigg(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},$$

$$\sqrt{-\frac{Ib-a}{Ib+a}}\Bigg)\sqrt{\frac{(I-\sinh(x))\,b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))\,b}{Ib-a}}\,b^5 + 42\,A\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticF}\Bigg(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},$$

$$\sqrt{-\frac{Ib-a}{Ib+a}}\Bigg)\sqrt{\frac{(I-\sinh(x))\,b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))\,b}{Ib-a}}\,a^2 b^3 - 98\,A\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticE}\Bigg(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},$$

$$\sqrt{-\frac{Ib-a}{Ib+a}}\Bigg)\sqrt{\frac{(I-\sinh(x))\,b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))\,b}{Ib-a}}\,a^2 b^3 - 120\,B\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticF}\Bigg(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},$$

$$\sqrt{-\frac{Ib-a}{Ib+a}}\Bigg)\sqrt{\frac{(I-\sinh(x))\,b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))\,b}{Ib-a}}\,a^3 b^2 - 120\,B\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticF}\Bigg(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},$$

$$\sqrt{-\frac{Ib-a}{Ib+a}}\Bigg)\sqrt{\frac{(I-\sinh(x))\,b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))\,b}{Ib-a}}\,a\,b^4 + 130\,B\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticE}\Bigg(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},$$

$$\sqrt{-\frac{Ib-a}{Ib+a}}\Bigg)\sqrt{\frac{(I-\sinh(x))\,b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))\,b}{Ib-a}}\,a^3 b^2 + 145\,B\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticE}\Bigg(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},$$

$$\sqrt{-\frac{Ib-a}{Ib+a}}\Bigg)\sqrt{\frac{(I-\sinh(x))\,b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))\,b}{Ib-a}}\,a\,b^4 + 105\,A\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticF}\Bigg(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},$$

$$\sqrt{-\frac{Ib-a}{Ib+a}}\Bigg)\sqrt{\frac{(I-\sinh(x))\,b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))\,b}{Ib-a}}\,a^4 b - 161\,A\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticE}\Bigg(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},$$

$$\sqrt{-\frac{Ib-a}{Ib+a}}\Bigg)\sqrt{\frac{(I-\sinh(x))\,b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))\,b}{Ib-a}}\,a^4 b + 56\,I\,A\sqrt{-\frac{a+b\sinh(x)}{Ib-a}}\,\mathrm{EllipticF}\Bigg(\sqrt{-\frac{a+b\sinh(x)}{Ib-a}},$$

$$\sqrt{-\frac{Ib-a}{Ib+a}}\Bigg)\sqrt{\frac{(I-\sinh(x))\,b}{Ib+a}}\sqrt{\frac{(I+\sinh(x))\,b}{Ib-a}}\,a\,b^4 + 77\,A\,a^2 b^3 + 45\,B\,a^3 b^2 - 25\,B\,a\,b^4\Bigg)\Bigg)$$

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

$$\int \frac{A+B\sinh(x)}{(a+b\sinh(x))^3}\,dx$$

Optimal(type 3, 118 leaves, 6 steps):

$$-\frac{\left(2a^2A-Ab^2+3abB\right)\operatorname{arctanh}\left(\frac{b-a\tanh\left(\frac{x}{2}\right)}{\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{5/2}}-\frac{(Ab-aB)\cosh(x)}{2\left(a^2+b^2\right)(a+b\sinh(x))^2}-\frac{\left(3aAb-a^2B+2b^2B\right)\cosh(x)}{2\left(a^2+b^2\right)^2(a+b\sinh(x))}$$

Result(type 3, 313 leaves):

$$-\frac{1}{\left(\tanh\left(\frac{x}{2}\right)^2 a-2\tanh\left(\frac{x}{2}\right) b-a\right)^2}\left(2\left(-\frac{b\left(5a^2Ab+2Ab^3-3a^3B\right)\tanh\left(\frac{x}{2}\right)^3}{2a\left(a^4+2b^2a^2+b^4\right)}\right.\right.$$

$$-\frac{\left(4Aa^4b-7Aa^2b^3-2Ab^5-2Ba^5+5Ba^3b^2-2Bab^4\right)\tanh\left(\frac{x}{2}\right)^2}{2\left(a^4+2b^2a^2+b^4\right)a^2}+\frac{b\left(11a^2Ab+2Ab^3-5a^3B+4ab^2B\right)\tanh\left(\frac{x}{2}\right)}{2\left(a^4+2b^2a^2+b^4\right)a}$$

$$\left.\left.+\frac{4a^2Ab+Ab^3-2a^3B+ab^2B}{2\left(a^4+2b^2a^2+b^4\right)}\right)\right)+\frac{\left(2a^2A-Ab^2+3abB\right)\operatorname{arctanh}\left(\frac{2a\tanh\left(\frac{x}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{\left(a^4+2b^2a^2+b^4\right)\sqrt{a^2+b^2}}$$

Problem 42: Unable to integrate problem.

$$\int \left(a\sinh(x)^3\right)^{3/2}\,dx$$

Optimal(type 4, 89 leaves, 5 steps):

$$-\frac{14a\cosh(x)\sqrt{a\sinh(x)^3}}{45}+\frac{2a\cosh(x)\sinh(x)^2\sqrt{a\sinh(x)^3}}{9}+\frac{14\,I\,a\operatorname{csch}(x)\sqrt{\sin\left(\frac{\pi}{4}+\frac{Ix}{2}\right)^2}\operatorname{EllipticE}\left(\cos\left(\frac{\pi}{4}+\frac{Ix}{2}\right),\sqrt{2}\right)\sqrt{a\sinh(x)^3}}{15\sin\left(\frac{\pi}{4}+\frac{Ix}{2}\right)\sqrt{I\sinh(x)}}$$

Result(type 8, 10 leaves):

$$\int \left(a\sinh(x)^3\right)^{3/2}\,dx$$

Problem 43: Unable to integrate problem.

$$\int \sqrt{a\sinh(x)^3}\,dx$$

Optimal(type 4, 72 leaves, 4 steps):

$$\frac{2\coth(x)\sqrt{a\sinh(x)^3}}{3}-\frac{2\,I\operatorname{csch}(x)^2\sqrt{\sin\left(\frac{\pi}{4}+\frac{Ix}{2}\right)^2}\operatorname{EllipticF}\left(\cos\left(\frac{\pi}{4}+\frac{Ix}{2}\right),\sqrt{2}\right)\sqrt{I\sinh(x)}\sqrt{a\sinh(x)^3}}{3\sin\left(\frac{\pi}{4}+\frac{Ix}{2}\right)}$$

Result(type 8, 10 leaves):

$$\int \sqrt{a\sinh(x)^3}\,dx$$

Problem 45: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{a \sinh(x)^4}} \, dx$$

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

$$-\frac{\cosh(x) \sinh(x)}{\sqrt{a \sinh(x)^4}}$$

Result(type 3, 49 leaves):

$$-\frac{\sqrt{a(-1+\cosh(2x))(\cosh(2x)+1)} \sqrt{a \sinh(2x)^2}}{a \sinh(2x) \sqrt{a(-1+\cosh(2x))^2}}$$

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

$$\int \frac{\operatorname{sech}(x)^2}{I+\sinh(x)} \, dx$$

Optimal(type 3, 18 leaves, 3 steps):

$$-\frac{I \operatorname{sech}(x)}{3(I+\sinh(x))} - \frac{2 I \tanh(x)}{3}$$

Result(type 3, 48 leaves):

$$-\frac{1}{\left(\tanh\left(\frac{x}{2}\right)+I\right)^2} + \frac{2 I}{3\left(\tanh\left(\frac{x}{2}\right)+I\right)^3} - \frac{3 I}{2\left(\tanh\left(\frac{x}{2}\right)+I\right)} - \frac{I}{2\left(\tanh\left(\frac{x}{2}\right)-I\right)}$$

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

$$\int \frac{\cosh(x)^6}{a+b\sinh(x)} \, dx$$

Optimal(type 3, 132 leaves, 7 steps):

$$-\frac{a(8a^4+20b^2a^2+15b^4)x}{8b^6} - \frac{2(a^2+b^2)^{5/2} \operatorname{arctanh}\left(\frac{b-a\tanh\left(\frac{x}{2}\right)}{\sqrt{a^2+b^2}}\right)}{b^6} + \frac{\cosh(x)^5}{5b} + \frac{\cosh(x)^3(4a^2+4b^2-3ab\sinh(x))}{12b^3}$$
$$+ \frac{\cosh(x)\left(8(a^2+b^2)^2 - ab(4a^2+7b^2)\sinh(x)\right)}{8b^5}$$

Result(type 3, 673 leaves):

$$\frac{a^4}{b^5\left(\tanh\left(\frac{x}{2}\right)+1\right)}-\frac{a^3}{2b^4\left(\tanh\left(\frac{x}{2}\right)+1\right)}+\frac{5a^2}{2b^3\left(\tanh\left(\frac{x}{2}\right)+1\right)}-\frac{9a}{8b^2\left(\tanh\left(\frac{x}{2}\right)+1\right)}-\frac{a^5\ln\left(\tanh\left(\frac{x}{2}\right)+1\right)}{b^6}-\frac{5a^3\ln\left(\tanh\left(\frac{x}{2}\right)+1\right)}{2b^4}$$
$$-\frac{a}{4b^2\left(\tanh\left(\frac{x}{2}\right)-1\right)^4}-\frac{a^2}{3b^3\left(\tanh\left(\frac{x}{2}\right)-1\right)^3}-\frac{a}{2b^2\left(\tanh\left(\frac{x}{2}\right)-1\right)^3}-\frac{a^3}{2b^4\left(\tanh\left(\frac{x}{2}\right)-1\right)^2}-\frac{a^2}{2b^3\left(\tanh\left(\frac{x}{2}\right)-1\right)^2}$$
$$-\frac{11a}{8b^2\left(\tanh\left(\frac{x}{2}\right)-1\right)^2}-\frac{a^4}{b^5\left(\tanh\left(\frac{x}{2}\right)-1\right)}-\frac{a^3}{2b^4\left(\tanh\left(\frac{x}{2}\right)-1\right)}-\frac{5a^2}{2b^3\left(\tanh\left(\frac{x}{2}\right)-1\right)}-\frac{9a}{8b^2\left(\tanh\left(\frac{x}{2}\right)-1\right)}$$
$$+\frac{a^5\ln\left(\tanh\left(\frac{x}{2}\right)-1\right)}{b^6}+\frac{5a^3\ln\left(\tanh\left(\frac{x}{2}\right)-1\right)}{2b^4}+\frac{15a\ln\left(\tanh\left(\frac{x}{2}\right)-1\right)}{8b^2}-\frac{15a\ln\left(\tanh\left(\frac{x}{2}\right)+1\right)}{8b^2}+\frac{a}{4b^2\left(\tanh\left(\frac{x}{2}\right)+1\right)^4}$$
$$+\frac{a^2}{3b^3\left(\tanh\left(\frac{x}{2}\right)+1\right)^3}-\frac{a}{2b^2\left(\tanh\left(\frac{x}{2}\right)+1\right)^3}+\frac{a^3}{2b^4\left(\tanh\left(\frac{x}{2}\right)+1\right)^2}-\frac{a^2}{2b^3\left(\tanh\left(\frac{x}{2}\right)+1\right)^2}+\frac{11a}{8b^2\left(\tanh\left(\frac{x}{2}\right)+1\right)^2}$$
$$-\frac{13}{12b\left(\tanh\left(\frac{x}{2}\right)-1\right)^3}+\frac{13}{12b\left(\tanh\left(\frac{x}{2}\right)+1\right)^3}-\frac{1}{5b\left(\tanh\left(\frac{x}{2}\right)-1\right)^5}+\frac{1}{5b\left(\tanh\left(\frac{x}{2}\right)+1\right)^5}-\frac{15}{8b\left(\tanh\left(\frac{x}{2}\right)-1\right)}$$
$$+\frac{15}{8b\left(\tanh\left(\frac{x}{2}\right)+1\right)}-\frac{9}{8b\left(\tanh\left(\frac{x}{2}\right)-1\right)^2}-\frac{9}{8b\left(\tanh\left(\frac{x}{2}\right)+1\right)^2}-\frac{1}{2b\left(\tanh\left(\frac{x}{2}\right)-1\right)^4}-\frac{1}{2b\left(\tanh\left(\frac{x}{2}\right)+1\right)^4}$$
$$+\frac{2\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{x}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}}+\frac{6a^2\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{x}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{b^2\sqrt{a^2+b^2}}+\frac{2\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{x}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)a^6}{b^6\sqrt{a^2+b^2}}$$
$$+\frac{6\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{x}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)a^4}{b^4\sqrt{a^2+b^2}}$$

Problem 50: Result more than twice size of optimal antiderivative.

$$\int\frac{\cosh(x)^4}{a+b\sinh(x)}\,dx$$

Optimal(type 3, 86 leaves, 6 steps):

$$-\frac{a\left(2a^2+3b^2\right)x}{2b^4}-\frac{2\left(a^2+b^2\right)^{3/2}\operatorname{arctanh}\left(\frac{b-a\tanh\left(\frac{x}{2}\right)}{\sqrt{a^2+b^2}}\right)}{b^4}+\frac{\cosh(x)^3}{3b}+\frac{\cosh(x)\left(2a^2+2b^2-ab\sinh(x)\right)}{2b^3}$$

Result(type 3, 335 leaves):

$$-\frac{1}{3b\left(\tanh\left(\frac{x}{2}\right)-1\right)^3}-\frac{a}{2b^2\left(\tanh\left(\frac{x}{2}\right)-1\right)^2}-\frac{1}{2b\left(\tanh\left(\frac{x}{2}\right)-1\right)^2}-\frac{a^2}{b^3\left(\tanh\left(\frac{x}{2}\right)-1\right)}-\frac{a}{2b^2\left(\tanh\left(\frac{x}{2}\right)-1\right)}-\frac{3}{2b\left(\tanh\left(\frac{x}{2}\right)-1\right)}$$
$$+\frac{a^3\ln\left(\tanh\left(\frac{x}{2}\right)-1\right)}{b^4}+\frac{3a\ln\left(\tanh\left(\frac{x}{2}\right)-1\right)}{2b^2}+\frac{1}{3b\left(\tanh\left(\frac{x}{2}\right)+1\right)^3}+\frac{a}{2b^2\left(\tanh\left(\frac{x}{2}\right)+1\right)^2}-\frac{1}{2b\left(\tanh\left(\frac{x}{2}\right)+1\right)^2}$$
$$+\frac{a^2}{b^3\left(\tanh\left(\frac{x}{2}\right)+1\right)}-\frac{a}{2b^2\left(\tanh\left(\frac{x}{2}\right)+1\right)}+\frac{3}{2b\left(\tanh\left(\frac{x}{2}\right)+1\right)}-\frac{a^3\ln\left(\tanh\left(\frac{x}{2}\right)+1\right)}{b^4}-\frac{3a\ln\left(\tanh\left(\frac{x}{2}\right)+1\right)}{2b^2}$$
$$+\frac{2\operatorname{arctanh}\left(\frac{2a\tanh\left(\frac{x}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)a^4}{b^4\sqrt{a^2+b^2}}+\frac{4a^2\operatorname{arctanh}\left(\frac{2a\tanh\left(\frac{x}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{b^2\sqrt{a^2+b^2}}+\frac{2\operatorname{arctanh}\left(\frac{2a\tanh\left(\frac{x}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}}$$

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

$$\int\frac{\operatorname{sech}(x)^4}{a+b\sinh(x)}\,dx$$

Optimal(type 3, 90 leaves, 6 steps):

$$-\frac{2b^4\operatorname{arctanh}\left(\frac{b-a\tanh\left(\frac{x}{2}\right)}{\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{5/2}}+\frac{\operatorname{sech}(x)^3\left(b+a\sinh(x)\right)}{3\left(a^2+b^2\right)}+\frac{\operatorname{sech}(x)\left(3b^3+a\left(2a^2+5b^2\right)\sinh(x)\right)}{3\left(a^2+b^2\right)^2}$$

Result(type 3, 181 leaves):

$$-\frac{1}{\left(a^4+2b^2a^2+b^4\right)\left(\tanh\left(\frac{x}{2}\right)^2+1\right)^3}\left(2\left(\left(-a^3-2b^2a\right)\tanh\left(\frac{x}{2}\right)^5+\left(-a^2b-2b^3\right)\tanh\left(\frac{x}{2}\right)^4+\left(-\frac{2}{3}a^3-\frac{8}{3}b^2a\right)\tanh\left(\frac{x}{2}\right)^3-2\tanh\left(\frac{x}{2}\right)^2b^3\right.\right.$$

$$+ \left(-a^3 - 2 b^2 a\right) \tanh\left(\frac{x}{2}\right) - \frac{a^2 b}{3} - \frac{4 b^3}{3}\right)\right) + \frac{2 b^4 \operatorname{arctanh}\left(\frac{2 a \tanh\left(\frac{x}{2}\right) - 2 b}{2 \sqrt{a^2 + b^2}}\right)}{\left(a^4 + 2 b^2 a^2 + b^4\right) \sqrt{a^2 + b^2}}$$

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

$$\int \frac{\cosh(x)^4}{\left(a + b \sinh(x)\right)^2} \, dx$$

Optimal(type 3, 84 leaves, 6 steps):

$$\frac{3 \left(2 a^2 + b^2\right) x}{2 b^4} - \frac{3 \cosh(x) \left(2 a - b \sinh(x)\right)}{2 b^3} - \frac{\cosh(x)^3}{b \left(a + b \sinh(x)\right)} + \frac{6 a \operatorname{arctanh}\left(\frac{b - a \tanh\left(\frac{x}{2}\right)}{\sqrt{a^2 + b^2}}\right) \sqrt{a^2 + b^2}}{b^4}$$

Result(type 3, 289 leaves):

$$\frac{1}{2 b^2 \left(\tanh\left(\frac{x}{2}\right) - 1\right)^2} + \frac{1}{2 b^2 \left(\tanh\left(\frac{x}{2}\right) - 1\right)} + \frac{2 a}{b^3 \left(\tanh\left(\frac{x}{2}\right) - 1\right)} - \frac{3 \ln\left(\tanh\left(\frac{x}{2}\right) - 1\right) a^2}{b^4} - \frac{3 \ln\left(\tanh\left(\frac{x}{2}\right) - 1\right)}{2 b^2} - \frac{1}{2 b^2 \left(\tanh\left(\frac{x}{2}\right) + 1\right)^2}$$

$$+ \frac{1}{2 b^2 \left(\tanh\left(\frac{x}{2}\right) + 1\right)} - \frac{2 a}{b^3 \left(\tanh\left(\frac{x}{2}\right) + 1\right)} + \frac{3 \ln\left(\tanh\left(\frac{x}{2}\right) + 1\right) a^2}{b^4} + \frac{3 \ln\left(\tanh\left(\frac{x}{2}\right) + 1\right)}{2 b^2} + \frac{2 a \tanh\left(\frac{x}{2}\right)}{b^2 \left(\tanh\left(\frac{x}{2}\right)^2 a - 2 \tanh\left(\frac{x}{2}\right) b - a\right)}$$

$$+ \frac{2 \tanh\left(\frac{x}{2}\right)}{\left(\tanh\left(\frac{x}{2}\right)^2 a - 2 \tanh\left(\frac{x}{2}\right) b - a\right) a} + \frac{2 a^2}{b^3 \left(\tanh\left(\frac{x}{2}\right)^2 a - 2 \tanh\left(\frac{x}{2}\right) b - a\right)} + \frac{2}{b \left(\tanh\left(\frac{x}{2}\right)^2 a - 2 \tanh\left(\frac{x}{2}\right) b - a\right)}$$

$$- \frac{6 a \sqrt{a^2 + b^2} \operatorname{arctanh}\left(\frac{2 a \tanh\left(\frac{x}{2}\right) - 2 b}{2 \sqrt{a^2 + b^2}}\right)}{b^4}$$

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

$$\int \frac{\tanh(x)^4}{I + \sinh(x)} \, dx$$

Optimal(type 3, 24 leaves, 6 steps):

$$-\operatorname{sech}(x)+\frac{2\operatorname{sech}(x)^3}{3}-\frac{\operatorname{sech}(x)^5}{5}-\frac{I\tanh(x)^5}{5}$$

Result(type 3, 92 leaves):

$$\frac{I}{3\left(\tanh\left(\frac{x}{2}\right)+I\right)^3}-\frac{2I}{5\left(\tanh\left(\frac{x}{2}\right)+I\right)^5}-\frac{3I}{8\left(\tanh\left(\frac{x}{2}\right)+I\right)}+\frac{1}{\left(\tanh\left(\frac{x}{2}\right)+I\right)^4}+\frac{1}{2\left(\tanh\left(\frac{x}{2}\right)+I\right)^2}+\frac{3I}{8\left(\tanh\left(\frac{x}{2}\right)-I\right)}+\frac{I}{6\left(\tanh\left(\frac{x}{2}\right)-I\right)^3}+\frac{1}{4\left(\tanh\left(\frac{x}{2}\right)-I\right)^2}$$

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

$$\int\frac{\coth(x)^6}{I+\sinh(x)}\,dx$$

Optimal(type 3, 27 leaves, 6 steps):

$$-\frac{3\operatorname{arctanh}(\cosh(x))}{8}+\frac{I\coth(x)^5}{5}-\frac{3\coth(x)\operatorname{csch}(x)}{8}-\frac{\coth(x)^3\operatorname{csch}(x)}{4}$$

Result(type 3, 92 leaves):

$$\frac{I\tanh\left(\frac{x}{2}\right)}{16}+\frac{I\tanh\left(\frac{x}{2}\right)^5}{160}+\frac{\tanh\left(\frac{x}{2}\right)^4}{64}+\frac{I\tanh\left(\frac{x}{2}\right)^3}{32}+\frac{\tanh\left(\frac{x}{2}\right)^2}{8}+\frac{I}{160\tanh\left(\frac{x}{2}\right)^5}-\frac{1}{64\tanh\left(\frac{x}{2}\right)^4}+\frac{3\ln\left(\tanh\left(\frac{x}{2}\right)\right)}{8}-\frac{1}{8\tanh\left(\frac{x}{2}\right)^2}+\frac{I}{32\tanh\left(\frac{x}{2}\right)^3}+\frac{I}{16\tanh\left(\frac{x}{2}\right)}$$

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

$$\int\frac{\tanh(x)^2}{(I+\sinh(x))^2}\,dx$$

Optimal(type 3, 27 leaves, 10 steps):

$$\frac{2I\operatorname{sech}(x)^3}{3}-\frac{2I\operatorname{sech}(x)^5}{5}-\frac{\tanh(x)^3}{3}+\frac{2\tanh(x)^5}{5}$$

Result(type 3, 69 leaves):

$$\frac{2I}{\left(\tanh\left(\frac{x}{2}\right)+I\right)^4}-\frac{I}{2\left(\tanh\left(\frac{x}{2}\right)+I\right)^2}+\frac{4}{5\left(\tanh\left(\frac{x}{2}\right)+I\right)^5}-\frac{5}{3\left(\tanh\left(\frac{x}{2}\right)+I\right)^3}-\frac{1}{4\left(\tanh\left(\frac{x}{2}\right)+I\right)}+\frac{1}{4\left(\tanh\left(\frac{x}{2}\right)-I\right)}$$

Problem 58: Result more than twice size of optimal antiderivative.

$$\int \frac{\tanh(x)}{(I+\sinh(x))^2}\,dx$$

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

$$-\frac{I\arctan(\sinh(x))}{4}-\frac{1}{4(I+\sinh(x))^2}-\frac{I}{4(I+\sinh(x))}$$

Result(type 3, 65 leaves):

$$\frac{2I}{\left(\tanh\left(\frac{x}{2}\right)+I\right)^3}-\frac{I}{2\left(\tanh\left(\frac{x}{2}\right)+I\right)}+\frac{1}{\left(\tanh\left(\frac{x}{2}\right)+I\right)^4}-\frac{3}{2\left(\tanh\left(\frac{x}{2}\right)+I\right)^2}+\frac{\ln\left(\tanh\left(\frac{x}{2}\right)+I\right)}{4}-\frac{\ln\left(\tanh\left(\frac{x}{2}\right)-I\right)}{4}$$

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

$$\int \frac{\coth(x)^4}{(I+\sinh(x))^2}\,dx$$

Optimal(type 3, 24 leaves, 9 steps):

$$-I\,\text{arctanh}(\cosh(x))-2\coth(x)+\frac{\coth(x)^3}{3}+I\coth(x)\,\text{csch}(x)$$

Result(type 3, 57 leaves):

$$-\frac{7\tanh\left(\frac{x}{2}\right)}{8}+\frac{\tanh\left(\frac{x}{2}\right)^3}{24}-\frac{I\tanh\left(\frac{x}{2}\right)^2}{4}+I\ln\left(\tanh\left(\frac{x}{2}\right)\right)+\frac{I}{4\tanh\left(\frac{x}{2}\right)^2}+\frac{1}{24\tanh\left(\frac{x}{2}\right)^3}-\frac{7}{8\tanh\left(\frac{x}{2}\right)}$$

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

$$\int \frac{\coth(x)^2}{a+b\sinh(x)}\,dx$$

Optimal(type 3, 50 leaves, 7 steps):

$$\frac{b\,\text{arctanh}(\cosh(x))}{a^2}-\frac{\coth(x)}{a}-\frac{2\,\text{arctanh}\left(\frac{b-a\tanh\left(\frac{x}{2}\right)}{\sqrt{a^2+b^2}}\right)\sqrt{a^2+b^2}}{a^2}$$

Result(type 3, 106 leaves):

$$-\frac{\tanh\left(\frac{x}{2}\right)}{2a}-\frac{1}{2a\tanh\left(\frac{x}{2}\right)}-\frac{b\ln\left(\tanh\left(\frac{x}{2}\right)\right)}{a^2}+\frac{2\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{x}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}}+\frac{2\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{x}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)b^2}{a^2\sqrt{a^2+b^2}}$$

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

$$\int\frac{\tanh(x)}{(a+b\sinh(x))^2}\,dx$$

Optimal(type 3, 85 leaves, 6 steps):

$$\frac{2ab\arctan(\sinh(x))}{(a^2+b^2)^2}+\frac{(a^2-b^2)\ln(\cosh(x))}{(a^2+b^2)^2}-\frac{(a^2-b^2)\ln(a+b\sinh(x))}{(a^2+b^2)^2}+\frac{a}{(a^2+b^2)(a+b\sinh(x))}$$

Result(type 3, 247 leaves):

$$\frac{2\ln\left(\tanh\left(\frac{x}{2}\right)^2+1\right)a^2}{2a^4+4b^2a^2+2b^4}-\frac{2\ln\left(\tanh\left(\frac{x}{2}\right)^2+1\right)b^2}{2a^4+4b^2a^2+2b^4}+\frac{8ab\arctan\left(\tanh\left(\frac{x}{2}\right)\right)}{2a^4+4b^2a^2+2b^4}+\frac{2\tanh\left(\frac{x}{2}\right)a^2b}{(a^2+b^2)^2\left(\tanh\left(\frac{x}{2}\right)^2a-2\tanh\left(\frac{x}{2}\right)b-a\right)}$$
$$+\frac{2\tanh\left(\frac{x}{2}\right)b^3}{(a^2+b^2)^2\left(\tanh\left(\frac{x}{2}\right)^2a-2\tanh\left(\frac{x}{2}\right)b-a\right)}-\frac{\ln\left(\tanh\left(\frac{x}{2}\right)^2a-2\tanh\left(\frac{x}{2}\right)b-a\right)a^2}{(a^2+b^2)^2}+\frac{\ln\left(\tanh\left(\frac{x}{2}\right)^2a-2\tanh\left(\frac{x}{2}\right)b-a\right)b^2}{(a^2+b^2)^2}$$

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

$$\int\frac{\coth(x)^3}{(a+b\sinh(x))^2}\,dx$$

Optimal(type 3, 74 leaves, 3 steps):

$$\frac{2b\,\mathrm{csch}(x)}{a^3}-\frac{\mathrm{csch}(x)^2}{2a^2}+\frac{(a^2+3b^2)\ln(\sinh(x))}{a^4}-\frac{(a^2+3b^2)\ln(a+b\sinh(x))}{a^4}+\frac{a^2+b^2}{a^3(a+b\sinh(x))}$$

Result(type 3, 183 leaves):

$$-\frac{\tanh\left(\frac{x}{2}\right)^2}{8a^2}-\frac{\tanh\left(\frac{x}{2}\right)b}{a^3}-\frac{1}{8a^2\tanh\left(\frac{x}{2}\right)^2}+\frac{\ln\left(\tanh\left(\frac{x}{2}\right)\right)}{a^2}+\frac{3\ln\left(\tanh\left(\frac{x}{2}\right)\right)b^2}{a^4}+\frac{b}{a^3\tanh\left(\frac{x}{2}\right)}+\frac{2\tanh\left(\frac{x}{2}\right)b}{a^2\left(\tanh\left(\frac{x}{2}\right)^2a-2\tanh\left(\frac{x}{2}\right)b-a\right)}$$

$$+\frac{2\tanh\left(\frac{x}{2}\right)b^3}{a^4\left(\tanh\left(\frac{x}{2}\right)^2 a-2\tanh\left(\frac{x}{2}\right)b-a\right)}-\frac{\ln\left(\tanh\left(\frac{x}{2}\right)^2 a-2\tanh\left(\frac{x}{2}\right)b-a\right)}{a^2}-\frac{3\ln\left(\tanh\left(\frac{x}{2}\right)^2 a-2\tanh\left(\frac{x}{2}\right)b-a\right)b^2}{a^4}$$

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

$$\int\frac{\coth(x)^4}{(a+b\sinh(x))^2}\,dx$$

Optimal(type 3, 147 leaves, 8 steps):

$$\frac{b\,(3a^2+4b^2)\operatorname{arctanh}(\cosh(x))}{a^5}-\frac{(7a^2+12b^2)\coth(x)}{3a^4}+\frac{(a^2+2b^2)\coth(x)\operatorname{csch}(x)}{a^3 b}-\frac{\left(3+\frac{4b^2}{a^2}\right)\coth(x)\operatorname{csch}(x)}{3b\,(a+b\sinh(x))}-\frac{\coth(x)\operatorname{csch}(x)^2}{3a\,(a+b\sinh(x))}$$
$$-\frac{2\,(a^2+4b^2)\operatorname{arctanh}\left(\frac{b-a\tanh\left(\frac{x}{2}\right)}{\sqrt{a^2+b^2}}\right)\sqrt{a^2+b^2}}{a^5}$$

Result(type 3, 356 leaves):

$$-\frac{\tanh\left(\frac{x}{2}\right)^3}{24a^2}-\frac{\tanh\left(\frac{x}{2}\right)^2 b}{4a^3}-\frac{5\tanh\left(\frac{x}{2}\right)}{8a^2}-\frac{3\tanh\left(\frac{x}{2}\right)b^2}{2a^4}-\frac{1}{24\tanh\left(\frac{x}{2}\right)^3 a^2}-\frac{5}{8a^2\tanh\left(\frac{x}{2}\right)}-\frac{3b^2}{2a^4\tanh\left(\frac{x}{2}\right)}+\frac{b}{4\tanh\left(\frac{x}{2}\right)^2 a^3}$$
$$-\frac{3b\ln\left(\tanh\left(\frac{x}{2}\right)\right)}{a^3}-\frac{4b^3\ln\left(\tanh\left(\frac{x}{2}\right)\right)}{a^5}+\frac{2\tanh\left(\frac{x}{2}\right)b^2}{a^3\left(\tanh\left(\frac{x}{2}\right)^2 a-2\tanh\left(\frac{x}{2}\right)b-a\right)}+\frac{2\tanh\left(\frac{x}{2}\right)b^4}{a^5\left(\tanh\left(\frac{x}{2}\right)^2 a-2\tanh\left(\frac{x}{2}\right)b-a\right)}$$
$$+\frac{2b}{a^2\left(\tanh\left(\frac{x}{2}\right)^2 a-2\tanh\left(\frac{x}{2}\right)b-a\right)}+\frac{2b^3}{a^4\left(\tanh\left(\frac{x}{2}\right)^2 a-2\tanh\left(\frac{x}{2}\right)b-a\right)}+\frac{2\operatorname{arctanh}\left(\frac{2a\tanh\left(\frac{x}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{a\sqrt{a^2+b^2}}$$
$$+\frac{10\operatorname{arctanh}\left(\frac{2a\tanh\left(\frac{x}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)b^2}{a^3\sqrt{a^2+b^2}}+\frac{8\operatorname{arctanh}\left(\frac{2a\tanh\left(\frac{x}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)b^4}{a^5\sqrt{a^2+b^2}}$$

Problem 70: Unable to integrate problem.

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

Optimal(type 4, 261 leaves, 11 steps):

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

Result(type 8, 16 leaves):

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

Problem 71: Result is not expressed in closed-form.

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

Optimal(type 4, 171 leaves, 9 steps):

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

Result(type 7, 62 leaves):

$$\sum_{\_R1 = RootOf(b\,\_Z^4 + (4a - 2b)\,\_Z^2 + b)} \frac{x \ln\left(\frac{\_R1 - e^x}{\_R1}\right) + \operatorname{dilog}\left(\frac{\_R1 - e^x}{\_R1}\right)}{\_R1^2\, b + 2a - b}$$

Problem 73: Unable to integrate problem.

$$\int \sinh(a + b \ln(c x^n))^2 \, dx$$

Optimal(type 3, 88 leaves, 2 steps):

$$\frac{2 b^2 n^2 x}{-4 b^2 n^2 + 1} - \frac{2 b n x \cosh(a + b \ln(c x^n)) \sinh(a + b \ln(c x^n))}{-4 b^2 n^2 + 1} + \frac{x \sinh(a + b \ln(c x^n))^2}{-4 b^2 n^2 + 1}$$

Result(type 8, 15 leaves):

$$\int \sinh\left(a+b\ln\left(c x^{n}\right)\right)^{2} dx$$

Problem 79: Result more than twice size of optimal antiderivative.

$$\int \sinh\left(\frac{b x+a}{d x+c}\right) dx$$

Optimal(type 4, 101 leaves, 5 steps):

$$\frac{(-a d+c b) \operatorname{Chi}\left(\frac{-a d+c b}{d (d x+c)}\right) \cosh\left(\frac{b}{d}\right)}{d^{2}}-\frac{(-a d+c b) \operatorname{Shi}\left(\frac{-a d+c b}{d (d x+c)}\right) \sinh\left(\frac{b}{d}\right)}{d^{2}}+\frac{(d x+c) \sinh\left(\frac{b x+a}{d x+c}\right)}{d}$$

Result(type 4, 346 leaves):

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

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

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

Optimal(type 4, 131 leaves, 7 steps):

$$-\frac{(-a d+c b) f \cosh\left(2 e+\frac{2 b f}{d}\right) \operatorname{Shi}\left(\frac{2 (-a d+c b) f}{d (d x+c)}\right)}{d^{2}}+\frac{(-a d+c b) f \operatorname{Chi}\left(\frac{2 (-a d+c b) f}{d (d x+c)}\right) \sinh\left(2 e+\frac{2 b f}{d}\right)}{d^{2}}$$
$$+\frac{(d x+c) \sinh\left(\frac{b f x+d e x+a f+c e}{d x+c}\right)^{2}}{d}$$

Result(type 4, 467 leaves):

$$-\frac{x}{2}+\frac{f e^{-\frac{2 (b f x+d e x+a f+c e)}{d x+c}} a}{4\left(\frac{d f a}{d x+c}-\frac{f c b}{d x+c}\right)}-\frac{f e^{-\frac{2 (b f x+d e x+a f+c e)}{d x+c}} c b}{4 d\left(\frac{d f a}{d x+c}-\frac{f c b}{d x+c}\right)}-\frac{f e^{-\frac{2 (b f+d e)}{d}} \operatorname{Ei}_{1}\left(\frac{2 (a d-c b) f}{d (d x+c)}\right) a}{2 d}+\frac{f e^{-\frac{2 (b f+d e)}{d}} \operatorname{Ei}_{1}\left(\frac{2 (a d-c b) f}{d (d x+c)}\right) c b}{2 d^{2}}$$

$$+\frac{f e^{\frac{2(bfx+dex+af+ce)}{dx+c}} a}{4d\left(\frac{fa}{dx+c}-\frac{fcb}{d(dx+c)}\right)}-\frac{f e^{\frac{2(bfx+dex+af+ce)}{dx+c}} cb}{4d^2\left(\frac{fa}{dx+c}-\frac{fcb}{d(dx+c)}\right)}+\frac{f e^{\frac{2(bf+de)}{d}} \mathrm{Ei}_1\left(-\frac{2(ad-cb)f}{d(dx+c)}-\frac{2(bf+de)}{d}-\frac{2(-bf-de)}{d}\right) a}{2d}$$

$$-\frac{f e^{\frac{2(bf+de)}{d}} \mathrm{Ei}_1\left(-\frac{2(ad-cb)f}{d(dx+c)}-\frac{2(bf+de)}{d}-\frac{2(-bf-de)}{d}\right) cb}{2d^2}$$

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

$$\int e^x \operatorname{csch}(2x)\, dx$$

Optimal(type 3, 9 leaves, 5 steps):

$$\arctan(e^x)-\operatorname{arctanh}(e^x)$$

Result(type 3, 33 leaves):

$$\frac{I\ln(e^x+I)}{2}-\frac{I\ln(e^x-I)}{2}-\frac{\ln(1+e^x)}{2}+\frac{\ln(e^x-1)}{2}$$

Problem 85: Unable to integrate problem.

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

Optimal(type 5, 114 leaves, 2 steps):

$$-\frac{F^{c(bx+a)}\coth(ex+d)\operatorname{csch}(ex+d)}{2e}-\frac{bcF^{c(bx+a)}\operatorname{csch}(ex+d)\ln(F)}{2e^2}$$

$$+\frac{e^{ex+d}F^{c(bx+a)}\operatorname{hypergeom}\left(\left[1,\frac{e+bc\ln(F)}{2e}\right],\left[\frac{3}{2}+\frac{bc\ln(F)}{2e}\right],e^{2ex+2d}\right)(e-bc\ln(F))}{e^2}$$

Result(type 8, 20 leaves):

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

Test results for the 140 problems in "6.1.7 hyper^m (a+b sinh^n)^p.txt"

Problem 11: Result more than twice size of optimal antiderivative.

$$\int \frac{\sinh(dx+c)^6}{a+b\sinh(dx+c)^2}\, dx$$

Optimal(type 3, 107 leaves, 6 steps):

$$\frac{(8a^2+4ab+3b^2)x}{8b^3}-\frac{(4a+3b)\cosh(dx+c)\sinh(dx+c)}{8b^2d}+\frac{\cosh(dx+c)\sinh(dx+c)^3}{4bd}-\frac{a^{5/2}\operatorname{arctanh}\left(\frac{\sqrt{a-b}\tanh(dx+c)}{\sqrt{a}}\right)}{b^3d\sqrt{a-b}}$$

Result(type 3, 669 leaves):

$$\frac{a^3\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)}{db^3\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}+\frac{a^3\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)}{db^2\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}-\frac{a^3\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)}{db^3\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}$$

$$+\frac{a^3\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)}{db^2\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}+\frac{1}{4db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^4}+\frac{1}{2db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^3}$$

$$-\frac{a}{2db^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^2}-\frac{1}{8db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^2}-\frac{a}{2db^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{3}{8db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}$$

$$-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)a^2}{db^3}-\frac{a\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{2db^2}-\frac{3\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{8db}-\frac{1}{4db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^4}$$

$$+\frac{1}{2db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^3}-\frac{a}{2db^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}-\frac{3}{8db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}+\frac{1}{8db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^2}$$

$$+\frac{a}{2db^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^2}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)a^2}{db^3}+\frac{a\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{2db^2}+\frac{3\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{8db}$$

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

$$\int\frac{1}{a+b\sinh(dx+c)^2}\,dx$$

Optimal(type 3, 32 leaves, 2 steps):

$$\frac{\operatorname{arctanh}\left(\frac{\sqrt{a-b}\tanh(dx+c)}{\sqrt{a}}\right)}{d\sqrt{a}\sqrt{a-b}}$$

Result(type 3, 266 leaves):

$$-\frac{\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)}{d\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}-\frac{\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)b}{d\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}+\frac{\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)}{d\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}$$
$$-\frac{\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)b}{d\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}$$

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Problem 13: Result more than twice size of optimal antiderivative.
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$$\int\frac{\operatorname{csch}(dx+c)^4}{a+b\sinh(dx+c)^2}\,dx$$

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Optimal(type 3, 68 leaves, 4 steps):
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$$\frac{(a+b)\coth(dx+c)}{a^2 d}-\frac{\coth(dx+c)^3}{3ad}+\frac{b^2\operatorname{arctanh}\left(\frac{\sqrt{a-b}\tanh(dx+c)}{\sqrt{a}}\right)}{a^{5/2}d\sqrt{a-b}}$$

```
Result(type 3, 400 leaves):
```

$$-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^3}{24da}+\frac{3\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{8da}+\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b}{2da^2}-\frac{b^2\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)}{da^2\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}$$
$$-\frac{b^3\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)}{da^2\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}+\frac{b^2\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)}{da^2\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}$$
$$-\frac{b^3\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)}{da^2\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}-\frac{1}{24d\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^3a}+\frac{3}{8da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}+\frac{b}{2d\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a^2}$$

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Problem 14: Result more than twice size of optimal antiderivative.
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$$\int \frac{\operatorname{csch}(d x+c)^6}{a+b \sinh(d x+c)^2}\, dx$$

Optimal(type 3, 98 leaves, 4 steps):

$$-\frac{\left(a^2+a b+b^2\right) \coth(d x+c)}{a^3 d}+\frac{(2 a+b) \coth(d x+c)^3}{3 a^2 d}-\frac{\coth(d x+c)^5}{5 a d}-\frac{b^3 \operatorname{arctanh}\left(\frac{\sqrt{a-b}\, \tanh(d x+c)}{\sqrt{a}}\right)}{a^{7/2} d \sqrt{a-b}}$$

Result(type 3, 518 leaves):

$$-\frac{\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^5}{160 d a}+\frac{5 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^3}{96 d a}+\frac{\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^3 b}{24 d a^2}-\frac{5 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)}{16 d a}-\frac{3 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right) b}{8 d a^2}-\frac{\tanh\left(\frac{d x}{2}+\frac{c}{2}\right) b^2}{2 d a^3}$$
$$+\frac{b^3 \arctan\left(\frac{a \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)}{\sqrt{\left(2 \sqrt{-(a-b) b}-a+2 b\right) a}}\right)}{d a^3 \sqrt{\left(2 \sqrt{-(a-b) b}-a+2 b\right) a}}+\frac{b^4 \arctan\left(\frac{a \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)}{\sqrt{\left(2 \sqrt{-(a-b) b}-a+2 b\right) a}}\right)}{d a^3 \sqrt{-(a-b) b}\, \sqrt{\left(2 \sqrt{-(a-b) b}-a+2 b\right) a}}$$
$$-\frac{b^3 \operatorname{arctanh}\left(\frac{a \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)}{\sqrt{\left(2 \sqrt{-(a-b) b}+a-2 b\right) a}}\right)}{d a^3 \sqrt{\left(2 \sqrt{-(a-b) b}+a-2 b\right) a}}+\frac{b^4 \operatorname{arctanh}\left(\frac{a \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)}{\sqrt{\left(2 \sqrt{-(a-b) b}+a-2 b\right) a}}\right)}{d a^3 \sqrt{-(a-b) b}\, \sqrt{\left(2 \sqrt{-(a-b) b}+a-2 b\right) a}}-\frac{1}{160 d a \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^5}$$
$$+\frac{5}{96 d \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^3 a}+\frac{b}{24 d a^2 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^3}-\frac{5}{16 d a \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)}-\frac{3 b}{8 d \tanh\left(\frac{d x}{2}+\frac{c}{2}\right) a^2}-\frac{b^2}{2 d a^3 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)}$$

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

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

Optimal(type 3, 69 leaves, 3 steps):

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

Result(type 3, 255 leaves):

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

$$+\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 b}{d\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a+4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+a\right)(a-b)a}$$

$$+\frac{1}{d\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a+4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+a\right)(a-b)}+\frac{\arctan\left(\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a-2a+4b}{4\sqrt{ab-b^2}}\right)}{2d(a-b)\sqrt{ab-b^2}}$$

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Problem 16: Result more than twice size of optimal antiderivative.
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$$\int\frac{\operatorname{csch}(dx+c)}{\left(a+b\sinh(dx+c)^2\right)^2}\,dx$$

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Optimal(type 3, 98 leaves, 5 steps):
```

$$-\frac{\operatorname{arctanh}(\cosh(dx+c))}{a^2 d}-\frac{b\cosh(dx+c)}{2a(a-b)d\left(a-b+b\cosh(dx+c)^2\right)}-\frac{(3a-2b)\arctan\left(\frac{\cosh(dx+c)\sqrt{b}}{\sqrt{a-b}}\right)\sqrt{b}}{2a^2(a-b)^{3/2}d}$$

```
Result(type 3, 349 leaves):
```

$$\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 b}{d\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a+4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+a\right)(a-b)a}$$

$$-\frac{2b^2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}{da^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a+4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+a\right)(a-b)}$$

$$-\frac{b}{da\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a+4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+a\right)(a-b)}-\frac{3b\arctan\left(\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a-2a+4b}{4\sqrt{ab-b^2}}\right)}{2da(a-b)\sqrt{ab-b^2}}$$

$$+\frac{b^2\arctan\left(\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a-2a+4b}{4\sqrt{ab-b^2}}\right)}{da^2(a-b)\sqrt{ab-b^2}}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{da^2}$$

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

$$\int \frac{\operatorname{csch}(dx+c)^3}{\left(a+b\sinh(dx+c)^2\right)^2}\,dx$$

Optimal(type 3, 145 leaves, 6 steps):

$$\frac{(5a-4b)\,b^{3/2}\arctan\left(\frac{\cosh(dx+c)\sqrt{b}}{\sqrt{a-b}}\right)}{2a^3(a-b)^{3/2}d}+\frac{(a+4b)\operatorname{arctanh}(\cosh(dx+c))}{2a^3 d}-\frac{(a-2b)\,b\cosh(dx+c)}{2a^2(a-b)\,d\left(a-b+b\cosh(dx+c)^2\right)}-\frac{\coth(dx+c)\operatorname{csch}(dx+c)}{2ad\left(a-b+b\cosh(dx+c)^2\right)}$$

Result(type 3, 414 leaves):

$$\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}{8da^2}-\frac{b^2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}{da^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a+4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+a\right)(a-b)}$$
$$+\frac{2b^3\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}{da^3\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a+4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+a\right)(a-b)}$$
$$+\frac{b^2}{da^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a+4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+a\right)(a-b)}+\frac{5b^2\arctan\left(\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a-2a+4b}{4\sqrt{ab-b^2}}\right)}{2da^2(a-b)\sqrt{ab-b^2}}$$
$$-\frac{2b^3\arctan\left(\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a-2a+4b}{4\sqrt{ab-b^2}}\right)}{da^3(a-b)\sqrt{ab-b^2}}-\frac{1}{8da^2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{2da^2}-\frac{2\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)b}{da^3}$$

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

$$\int \frac{\operatorname{csch}(dx+c)}{\left(a+b\sinh(dx+c)^2\right)^3}\,dx$$

Optimal(type 3, 152 leaves, 6 steps):

$$-\frac{\operatorname{arctanh}(\cosh(dx+c))}{a^3 d}-\frac{b\cosh(dx+c)}{4a(a-b)\,d\left(a-b+b\cosh(dx+c)^2\right)^2}-\frac{(7a-4b)\,b\cosh(dx+c)}{8a^2(a-b)^2 d\left(a-b+b\cosh(dx+c)^2\right)}$$

$$-\frac{\left(15 a^{2}-20 a b+8 b^{2}\right) \arctan\left(\frac{\cosh(d x+c) \sqrt{b}}{\sqrt{a-b}}\right) \sqrt{b}}{8 a^{3} (a-b)^{5/2} d}$$

Result(type 3, 1144 leaves):

$$\frac{9 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{6}}{4 d \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{4} a-2 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2} a+4 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}+a\right)^{2} \left(a^{2}-2 a b+b^{2}\right)}$$

$$-\frac{7 b^{2} \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{6}}{d a \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{4} a-2 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2} a+4 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}+a\right)^{2} \left(a^{2}-2 a b+b^{2}\right)}$$

$$+\frac{4 b^{3} \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{6}}{d a^{2} \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{4} a-2 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2} a+4 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}+a\right)^{2} \left(a^{2}-2 a b+b^{2}\right)}$$

$$-\frac{27 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{4}}{4 d \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{4} a-2 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2} a+4 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}+a\right)^{2} \left(a^{2}-2 a b+b^{2}\right)}$$

$$+\frac{45 b^{2} \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{4}}{2 d a \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{4} a-2 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2} a+4 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}+a\right)^{2} \left(a^{2}-2 a b+b^{2}\right)}$$

$$-\frac{30 b^{3} \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{4}}{d a^{2} \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{4} a-2 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2} a+4 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}+a\right)^{2} \left(a^{2}-2 a b+b^{2}\right)}$$

$$+\frac{12 b^{4} \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{4}}{d a^{3} \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{4} a-2 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2} a+4 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}+a\right)^{2} \left(a^{2}-2 a b+b^{2}\right)}$$

$$+\frac{27 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}}{4 d \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{4} a-2 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2} a+4 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}+a\right)^{2} \left(a^{2}-2 a b+b^{2}\right)}$$

$$- \frac{17 b^2 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^2}{d a \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^4 a - 2\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^2 a + 4 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^2 + a\right)^2 \left(a^2 - 2 a b + b^2\right)}$$
$$+ \frac{8 b^3 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^2}{d a^2 \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^4 a - 2\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^2 a + 4 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^2 + a\right)^2 \left(a^2 - 2 a b + b^2\right)}$$
$$- \frac{9 b}{4 d \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^4 a - 2\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^2 a + 4 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^2 + a\right)^2 \left(a^2 - 2 a b + b^2\right)}$$
$$+ \frac{3 b^2}{2 d a \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^4 a - 2\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^2 a + 4 b \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^2 + a\right)^2 \left(a^2 - 2 a b + b^2\right)}$$
$$- \frac{15 b \arctan\left(\frac{2\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^2 a - 2 a + 4 b}{4\sqrt{a b - b^2}}\right)}{8 d a \left(a^2 - 2 a b + b^2\right)\sqrt{a b - b^2}} + \frac{5 b^2 \arctan\left(\frac{2\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^2 a - 2 a + 4 b}{4\sqrt{a b - b^2}}\right)}{2 d a^2 \left(a^2 - 2 a b + b^2\right)\sqrt{a b - b^2}}$$
$$- \frac{b^3 \arctan\left(\frac{2\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^2 a - 2 a + 4 b}{4\sqrt{a b - b^2}}\right)}{d a^3 \left(a^2 - 2 a b + b^2\right)\sqrt{a b - b^2}} + \frac{\ln\left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)\right)}{d a^3}$$

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

$$\int \frac{\operatorname{csch}(d x + c)^4}{\left(a + b \sinh(d x + c)^2\right)^3}\, dx$$

Optimal(type 3, 241 leaves, 6 steps):

$$\frac{b^2\left(48 a^2 - 80 a b + 35 b^2\right) \operatorname{arctanh}\left(\frac{\sqrt{a-b}\,\tanh(d x + c)}{\sqrt{a}}\right)}{8 a^{9/2} (a-b)^{5/2} d} + \frac{\left(8 a^3 - 4 a^2 b - 45 b^2 a + 35 b^3\right)\coth(d x + c)}{8 a^4 (a-b)^2 d} - \frac{\left(8 a^2 - 52 a b + 35 b^2\right)\coth(d x + c)^3}{24 a^3 (a-b)^2 d}$$
$$- \frac{b \operatorname{csch}(d x + c)^3 \operatorname{sech}(d x + c)^3}{4 a (a-b) d \left(a - (a-b)\tanh(d x + c)^2\right)^2} - \frac{(10 a - 7 b) b \operatorname{csch}(d x + c)^3 \operatorname{sech}(d x + c)}{8 a^2 (a-b)^2 d \left(a - (a-b)\tanh(d x + c)^2\right)}$$

Result(type ?, 4745 leaves): Display of huge result suppressed!

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

$$\int \frac{1}{\left(1-\sinh(x)^2\right)^2}\, dx$$

Optimal(type 3, 29 leaves, 4 steps):

$$\frac{\cosh(x)\sinh(x)}{4\left(1-\sinh(x)^2\right)}+\frac{3\,\mathrm{arctanh}\left(\sqrt{2}\tanh(x)\right)\sqrt{2}}{8}$$

Result(type 3, 91 leaves):

$$-\frac{-\frac{\tanh\left(\frac{x}{2}\right)}{4}+\frac{1}{4}}{\tanh\left(\frac{x}{2}\right)^2+2\tanh\left(\frac{x}{2}\right)-1}+\frac{3\sqrt{2}\,\mathrm{arctanh}\left(\frac{\left(2\tanh\left(\frac{x}{2}\right)+2\right)\sqrt{2}}{4}\right)}{8}-\frac{-\frac{\tanh\left(\frac{x}{2}\right)}{4}-\frac{1}{4}}{\tanh\left(\frac{x}{2}\right)^2-2\tanh\left(\frac{x}{2}\right)-1}+\frac{3\sqrt{2}\,\mathrm{arctanh}\left(\frac{\left(2\tanh\left(\frac{x}{2}\right)-2\right)\sqrt{2}}{4}\right)}{8}$$

Problem 21: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\left(1-\sinh(x)^2\right)^3}\, dx$$

Optimal(type 3, 45 leaves, 5 steps):

$$\frac{\cosh(x)\sinh(x)}{8\left(1-\sinh(x)^2\right)^2}+\frac{9\cosh(x)\sinh(x)}{32\left(1-\sinh(x)^2\right)}+\frac{19\,\mathrm{arctanh}\left(\sqrt{2}\tanh(x)\right)\sqrt{2}}{64}$$

Result(type 3, 123 leaves):

$$-\frac{-\frac{13\tanh\left(\frac{x}{2}\right)^3}{8}-\frac{11\tanh\left(\frac{x}{2}\right)^2}{8}+\frac{31\tanh\left(\frac{x}{2}\right)}{8}-\frac{11}{8}}{4\left(\tanh\left(\frac{x}{2}\right)^2+2\tanh\left(\frac{x}{2}\right)-1\right)^2}+\frac{19\sqrt{2}\,\mathrm{arctanh}\left(\frac{\left(2\tanh\left(\frac{x}{2}\right)+2\right)\sqrt{2}}{4}\right)}{64}$$
$$-\frac{-\frac{13\tanh\left(\frac{x}{2}\right)^3}{8}+\frac{11\tanh\left(\frac{x}{2}\right)^2}{8}+\frac{31\tanh\left(\frac{x}{2}\right)}{8}+\frac{11}{8}}{4\left(\tanh\left(\frac{x}{2}\right)^2-2\tanh\left(\frac{x}{2}\right)-1\right)^2}+\frac{19\sqrt{2}\,\mathrm{arctanh}\left(\frac{\left(2\tanh\left(\frac{x}{2}\right)-2\right)\sqrt{2}}{4}\right)}{64}$$

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

$$\int \sinh(fx+e)^3\sqrt{a+b\sinh(fx+e)^2}\, dx$$

Optimal(type 3, 114 leaves, 5 steps):

$$-\frac{(a-b)(a+3b)\operatorname{arctanh}\left(\frac{\cosh(fx+e)\sqrt{b}}{\sqrt{a-b+b\cosh(fx+e)^2}}\right)}{8b^{3/2}f}+\frac{\cosh(fx+e)\left(a-b+b\cosh(fx+e)^2\right)^{3/2}}{4bf}$$

$$-\frac{(a+3b)\cosh(fx+e)\sqrt{a-b+b\cosh(fx+e)^2}}{8bf}$$

Result(type 3, 338 leaves):

$$\frac{1}{16b^{5/2}\cosh(fx+e)\sqrt{a+b\sinh(fx+e)^2}\,f}\Bigg(\sqrt{(a+b\sinh(fx+e)^2)\cosh(fx+e)^2}\,\Bigg(4\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}\,b^{5/2}\cosh(fx+e)^2$$

$$-10\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}\,b^{5/2}+2a\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}\,b^{3/2}$$

$$-\ln\left(\frac{2b\cosh(fx+e)^2+2\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}\sqrt{b}+a-b}{2\sqrt{b}}\right)a^2b$$

$$-2a\ln\left(\frac{2b\cosh(fx+e)^2+2\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}\sqrt{b}+a-b}{2\sqrt{b}}\right)b^2$$

$$+3b^3\ln\left(\frac{2b\cosh(fx+e)^2+2\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}\sqrt{b}+a-b}{2\sqrt{b}}\right)\Bigg)\Bigg)$$

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

$$\int \operatorname{csch}(fx+e)^5\sqrt{a+b\sinh(fx+e)^2}\,dx$$

Optimal(type 3, 128 leaves, 5 steps):

$$-\frac{(a-b)(3a+b)\operatorname{arctanh}\left(\frac{\cosh(fx+e)\sqrt{a}}{\sqrt{a-b+b\cosh(fx+e)^2}}\right)}{8a^{3/2}f}-\frac{\left(a-b+b\cosh(fx+e)^2\right)^{3/2}\coth(fx+e)\operatorname{csch}(fx+e)^3}{4af}$$

$$+\frac{(3a+b)\coth(fx+e)\operatorname{csch}(fx+e)\sqrt{a-b+b\cosh(fx+e)^2}}{8af}$$

Result(type 3, 380 leaves):

$$\frac{1}{16\sinh(fx+e)^4a^{5/2}\cosh(fx+e)\sqrt{a+b\sinh(fx+e)^2}\,f}\Bigg(\sqrt{(a+b\sinh(fx+e)^2)\cosh(fx+e)^2}\,\Bigg(6\sqrt{(a+b\sinh(fx+e)^2)\cosh(fx+e)^2}\sinh(fx$$

$$+e)^2a^{5/2}-3a^3\ln\left(\frac{(a+b)\cosh(fx+e)^2+2\sqrt{a}\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}+a-b}{\sinh(fx+e)^2}\right)\sinh(fx+e)^4$$

$$+2\,b\ln\left(\frac{(a+b)\cosh(fx+e)^2+2\sqrt{a}\,\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}+a-b}{\sinh(fx+e)^2}\right)\sinh(fx+e)^4 a^2$$

$$+\ln\left(\frac{(a+b)\cosh(fx+e)^2+2\sqrt{a}\,\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}+a-b}{\sinh(fx+e)^2}\right)b^2\sinh(fx+e)^4 a$$

$$-2\,b\sqrt{(a+b\sinh(fx+e)^2)\cosh(fx+e)^2}\,\sinh(fx+e)^2 a^{3/2}-4\sqrt{(a+b\sinh(fx+e)^2)\cosh(fx+e)^2}\,a^{5/2}\Bigg)\Bigg)$$

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

$$\int \operatorname{csch}(fx+e)^5\left(a+b\sinh(fx+e)^2\right)^{3/2}dx$$

Optimal(type 3, 119 leaves, 5 steps):

$$-\frac{(a-b+b\cosh(fx+e)^2)^{3/2}\coth(fx+e)\operatorname{csch}(fx+e)^3}{4f}-\frac{3\,(a-b)^2\operatorname{arctanh}\left(\frac{\cosh(fx+e)\sqrt{a}}{\sqrt{a-b+b\cosh(fx+e)^2}}\right)}{8f\sqrt{a}}$$

$$+\frac{3\,(a-b)\coth(fx+e)\operatorname{csch}(fx+e)\sqrt{a-b+b\cosh(fx+e)^2}}{8f}$$

Result(type 3, 378 leaves):

$$\frac{1}{16\sinh(fx+e)^4\sqrt{a}\cosh(fx+e)\sqrt{a+b\sinh(fx+e)^2}\,f}\Bigg(\sqrt{(a+b\sinh(fx+e)^2)\cosh(fx+e)^2}\,\Bigg($$

$$-3\ln\left(\frac{(a+b)\cosh(fx+e)^2+2\sqrt{a}\,\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}+a-b}{\sinh(fx+e)^2}\right)\sinh(fx+e)^4 a^2$$

$$+6\,a\,b\ln\left(\frac{(a+b)\cosh(fx+e)^2+2\sqrt{a}\,\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}+a-b}{\sinh(fx+e)^2}\right)\sinh(fx+e)^4$$

$$-3\ln\left(\frac{(a+b)\cosh(fx+e)^2+2\sqrt{a}\,\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}+a-b}{\sinh(fx+e)^2}\right)b^2\sinh(fx+e)^4$$

$$+6\sqrt{(a+b\sinh(fx+e)^2)\cosh(fx+e)^2}\,\sinh(fx+e)^2 a^{3/2}-10\,b\sqrt{(a+b\sinh(fx+e)^2)\cosh(fx+e)^2}\,\sinh(fx+e)^2\sqrt{a}$$

$$-4\,a^{3/2}\sqrt{(a+b\sinh(fx+e)^2)\cosh(fx+e)^2}\Bigg)\Bigg)$$

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

$$\int \operatorname{csch}(fx+e)^7\left(a+b\sinh(fx+e)^2\right)^{3/2}dx$$

Optimal(type 3, 179 leaves, 6 steps):

$$\frac{(a-b)^2 (5a+b) \operatorname{arctanh}\left(\frac{\cosh(fx+e)\sqrt{a}}{\sqrt{a-b+b\cosh(fx+e)^2}}\right)}{16 a^{3/2} f} + \frac{(5a+b)\left(a-b+b\cosh(fx+e)^2\right)^{3/2} \coth(fx+e)\operatorname{csch}(fx+e)^3}{24 a f} - \frac{\left(a-b+b\cosh(fx+e)^2\right)^{5/2} \coth(fx+e)\operatorname{csch}(fx+e)^5}{6 a f} - \frac{(a-b)(5a+b)\coth(fx+e)\operatorname{csch}(fx+e)\sqrt{a-b+b\cosh(fx+e)^2}}{16 a f}$$

Result(type 3, 568 leaves):

$$-\frac{1}{96 \sinh(fx+e)^6 a^{5/2} \cosh(fx+e)\sqrt{a+b\sinh(fx+e)^2}\, f}\Bigg(\sqrt{\left(a+b\sinh(fx+e)^2\right)\cosh(fx+e)^2}\,\Bigg(30 a^{7/2}\sqrt{\left(a+b\sinh(fx+e)^2\right)\cosh(fx+e)^2}\sinh(fx+e)^4 - 44 b\sqrt{\left(a+b\sinh(fx+e)^2\right)\cosh(fx+e)^2}\sinh(fx+e)^4 a^{5/2}$$
$$- 15 a^4 \ln\left(\frac{(a+b)\cosh(fx+e)^2 + 2\sqrt{a}\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}+a-b}{\sinh(fx+e)^2}\right)\sinh(fx+e)^6$$
$$+ 27 a^3 b \ln\left(\frac{(a+b)\cosh(fx+e)^2 + 2\sqrt{a}\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}+a-b}{\sinh(fx+e)^2}\right)\sinh(fx+e)^6$$
$$- 9 \ln\left(\frac{(a+b)\cosh(fx+e)^2 + 2\sqrt{a}\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}+a-b}{\sinh(fx+e)^2}\right) b^2 \sinh(fx+e)^6 a^2$$
$$- 3 \ln\left(\frac{(a+b)\cosh(fx+e)^2 + 2\sqrt{a}\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}+a-b}{\sinh(fx+e)^2}\right) b^3 \sinh(fx+e)^6 a$$
$$- 20 a^{7/2}\sqrt{\left(a+b\sinh(fx+e)^2\right)\cosh(fx+e)^2}\sinh(fx+e)^2 + 6 b^2\sqrt{\left(a+b\sinh(fx+e)^2\right)\cosh(fx+e)^2}\sinh(fx+e)^4 a^{3/2}$$
$$+ 28 b\sqrt{\left(a+b\sinh(fx+e)^2\right)\cosh(fx+e)^2}\sinh(fx+e)^2 a^{5/2} + 16 a^{7/2}\sqrt{\left(a+b\sinh(fx+e)^2\right)\cosh(fx+e)^2}\Bigg)\Bigg)$$

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

$$\int \sqrt{a+b\sinh(x)^2}\, dx$$

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

$$\frac{-I\sqrt{\cosh(x)^2}\,\operatorname{EllipticE}\left(I\sinh(x), \sqrt{\frac{b}{a}}\right)\sqrt{a+b\sinh(x)^2}}{\cosh(x)\sqrt{1+\frac{b\sinh(x)^2}{a}}}$$

Result(type 4, 108 leaves):

$$\frac{\sqrt{\frac{a+b\sinh(x)^2}{a}}\,\sqrt{\cosh(x)^2}\left(a\,\text{EllipticF}\left(\sinh(x)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)-b\,\text{EllipticF}\left(\sinh(x)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)+b\,\text{EllipticE}\left(\sinh(x)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)\right)}{\sqrt{-\frac{b}{a}}\cosh(x)\sqrt{a+b\sinh(x)^2}}$$

Problem 28: Result more than twice size of optimal antiderivative.

$$\int\frac{\operatorname{csch}(fx+e)}{\sqrt{a+b\sinh(fx+e)^2}}\,dx$$

Optimal(type 3, 36 leaves, 3 steps):

$$-\frac{\operatorname{arctanh}\left(\frac{\cosh(fx+e)\sqrt{a}}{\sqrt{a-b+b\cosh(fx+e)^2}}\right)}{f\sqrt{a}}$$

Result(type 3, 112 leaves):

$$-\frac{\sqrt{(a+b\sinh(fx+e)^2)\cosh(fx+e)^2}\,\ln\left(\frac{(a+b)\cosh(fx+e)^2+2\sqrt{a}\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}+a-b}{\sinh(fx+e)^2}\right)}{2\sqrt{a}\cosh(fx+e)\sqrt{a+b\sinh(fx+e)^2}\,f}$$

Problem 29: Result more than twice size of optimal antiderivative.

$$\int\frac{\operatorname{csch}(fx+e)^3}{\sqrt{a+b\sinh(fx+e)^2}}\,dx$$

Optimal(type 3, 77 leaves, 4 steps):

$$\frac{(a+b)\operatorname{arctanh}\left(\frac{\cosh(fx+e)\sqrt{a}}{\sqrt{a-b+b\cosh(fx+e)^2}}\right)}{2a^{3/2}f}-\frac{\coth(fx+e)\operatorname{csch}(fx+e)\sqrt{a-b+b\cosh(fx+e)^2}}{2af}$$

Result(type 3, 233 leaves):

$$-\frac{1}{4\sinh(fx+e)^2a^{5/2}\cosh(fx+e)\sqrt{a+b\sinh(fx+e)^2}\,f}\left(\sqrt{(a+b\sinh(fx+e)^2)\cosh(fx+e)^2}\left(\right.\right.$$

$$-\ln\left(\frac{(a+b)\cosh(fx+e)^2+2\sqrt{a}\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}+a-b}{\sinh(fx+e)^2}\right)\sinh(fx+e)^2a^2$$

$$-b\ln\left(\frac{(a+b)\cosh(fx+e)^2+2\sqrt{a}\sqrt{b\cosh(fx+e)^4+(a-b)\cosh(fx+e)^2}+a-b}{\sinh(fx+e)^2}\right)\sinh(fx+e)^2a$$

$$+2a^{3/2}\sqrt{(a+b\sinh(fx+e)^2)\cosh(fx+e)^2}\Bigg)\Bigg)$$

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

$$\int \frac{\sinh(fx+e)^6}{(a+b\sinh(fx+e)^2)^{5/2}}\,dx$$

Optimal(type 4, 400 leaves, 7 steps):

$$-\frac{a\cosh(fx+e)\sinh(fx+e)^3}{3(a-b)bf(a+b\sinh(fx+e)^2)^{3/2}}-\frac{2a(2a-3b)\cosh(fx+e)\sinh(fx+e)}{3(a-b)^2b^2f\sqrt{a+b\sinh(fx+e)^2}}$$

$$-\frac{(8a^2-13ab+3b^2)\sqrt{\frac{1}{1+\sinh(fx+e)^2}}\sqrt{1+\sinh(fx+e)^2}\,\mathrm{EllipticE}\left(\frac{\sinh(fx+e)}{\sqrt{1+\sinh(fx+e)^2}},\sqrt{1-\frac{b}{a}}\right)\mathrm{sech}(fx+e)\sqrt{a+b\sinh(fx+e)^2}}{3(a-b)^2b^3f\sqrt{\frac{\mathrm{sech}(fx+e)^2(a+b\sinh(fx+e)^2)}{a}}}$$

$$+\frac{2(2a-3b)\sqrt{\frac{1}{1+\sinh(fx+e)^2}}\sqrt{1+\sinh(fx+e)^2}\,\mathrm{EllipticF}\left(\frac{\sinh(fx+e)}{\sqrt{1+\sinh(fx+e)^2}},\sqrt{1-\frac{b}{a}}\right)\mathrm{sech}(fx+e)\sqrt{a+b\sinh(fx+e)^2}}{3(a-b)^2b^2f\sqrt{\frac{\mathrm{sech}(fx+e)^2(a+b\sinh(fx+e)^2)}{a}}}$$

$$+\frac{(8a^2-13ab+3b^2)\sqrt{a+b\sinh(fx+e)^2}\tanh(fx+e)}{3(a-b)^2b^3f}$$

Result(type 4, 867 leaves):

$$-\frac{1}{3\sqrt{-\frac{b}{a}}(a+b\sinh(fx+e)^2)^{3/2}(a-b)^2b^2\cosh(fx+e)f}\Bigg(\Bigg(5\sqrt{-\frac{b}{a}}a^2b-7\sqrt{-\frac{b}{a}}ab^2\Bigg)\sinh(fx+e)\cosh(fx+e)^4+\Bigg(4\sqrt{-\frac{b}{a}}a^3$$

$$-11\sqrt{-\frac{b}{a}}a^2b+7\sqrt{-\frac{b}{a}}ab^2\Bigg)\cosh(fx+e)^2\sinh(fx+e)+\sqrt{\cosh(fx+e)^2}\sqrt{\frac{b\cosh(fx+e)^2}{a}+\frac{a-b}{a}}\,b\Bigg(4\,\mathrm{EllipticF}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\right.$$

$$\left.\sqrt{\frac{a}{b}}\right)a^2-7\,\mathrm{EllipticF}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)ab+3\,\mathrm{EllipticF}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)b^2-8\,\mathrm{EllipticE}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)a^2$$

$$+13\,\mathrm{EllipticE}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)ab-3\,\mathrm{EllipticE}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)b^2\Bigg)\cosh(fx+e)^2$$

$$+4\sqrt{\frac{b\cosh(fx+e)^2}{a}+\frac{a-b}{a}}\sqrt{\cosh(fx+e)^2}\,\mathrm{EllipticF}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)a^3$$

$$- 11 \sqrt{\frac{b \cosh(fx+e)^2}{a} + \frac{a-b}{a}} \sqrt{\cosh(fx+e)^2} \operatorname{EllipticF}\left(\sinh(fx+e) \sqrt{-\frac{b}{a}}, \sqrt{\frac{a}{b}}\right) a^2 b$$

$$+ 10 \sqrt{\frac{b \cosh(fx+e)^2}{a} + \frac{a-b}{a}} \sqrt{\cosh(fx+e)^2} \operatorname{EllipticF}\left(\sinh(fx+e) \sqrt{-\frac{b}{a}}, \sqrt{\frac{a}{b}}\right) a b^2$$

$$- 3 \sqrt{\frac{b \cosh(fx+e)^2}{a} + \frac{a-b}{a}} \sqrt{\cosh(fx+e)^2} \operatorname{EllipticF}\left(\sinh(fx+e) \sqrt{-\frac{b}{a}}, \sqrt{\frac{a}{b}}\right) b^3$$

$$- 8 \sqrt{\frac{b \cosh(fx+e)^2}{a} + \frac{a-b}{a}} \sqrt{\cosh(fx+e)^2} \operatorname{EllipticE}\left(\sinh(fx+e) \sqrt{-\frac{b}{a}}, \sqrt{\frac{a}{b}}\right) a^3$$

$$+ 21 \sqrt{\frac{b \cosh(fx+e)^2}{a} + \frac{a-b}{a}} \sqrt{\cosh(fx+e)^2} \operatorname{EllipticE}\left(\sinh(fx+e) \sqrt{-\frac{b}{a}}, \sqrt{\frac{a}{b}}\right) a^2 b$$

$$- 16 \sqrt{\frac{b \cosh(fx+e)^2}{a} + \frac{a-b}{a}} \sqrt{\cosh(fx+e)^2} \operatorname{EllipticE}\left(\sinh(fx+e) \sqrt{-\frac{b}{a}}, \sqrt{\frac{a}{b}}\right) a b^2$$

$$+ 3 \sqrt{\frac{b \cosh(fx+e)^2}{a} + \frac{a-b}{a}} \sqrt{\cosh(fx+e)^2} \operatorname{EllipticE}\left(\sinh(fx+e) \sqrt{-\frac{b}{a}}, \sqrt{\frac{a}{b}}\right) b^3 \Bigg)$$

```
Problem 36: Result more than twice size of optimal antiderivative.
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$$\int \frac{\sinh(fx+e)^2}{\left(a+b\sinh(fx+e)^2\right)^{5/2}}\, dx$$

```
Optimal(type 4, 277 leaves, 7 steps):
```

$$\frac{\cosh(fx+e)\sinh(fx+e)}{3(a-b) f\left(a+b\sinh(fx+e)^2\right)^{3/2}} + \frac{(a+b)\cosh(fx+e)\sinh(fx+e)}{3a(a-b)^2 f\sqrt{a+b\sinh(fx+e)^2}}$$

$$+ \frac{I(a+b)\sqrt{\cos(Ie+Ifx)^2}\operatorname{EllipticE}\left(\sin(Ie+Ifx), \sqrt{\frac{b}{a}}\right)\sqrt{a+b\sinh(fx+e)^2}}{3\cos(Ie+Ifx)\, a(a-b)^2 b f\sqrt{1+\frac{b\sinh(fx+e)^2}{a}}}$$

$$- \frac{I\sqrt{\cos(Ie+Ifx)^2}\operatorname{EllipticF}\left(\sin(Ie+Ifx), \sqrt{\frac{b}{a}}\right)\sqrt{1+\frac{b\sinh(fx+e)^2}{a}}}{3\cos(Ie+Ifx)\,(a-b)\, b f\sqrt{a+b\sinh(fx+e)^2}}$$

```
Result(type 4, 597 leaves):
```

$$-\frac{1}{3\sqrt{-\frac{b}{a}}\left(a+b\sinh(fx+e)^2\right)^{3/2} a(a-b)^2\cosh(fx+e) f}\Bigg(\left(\left(-\sqrt{-\frac{b}{a}}\, a b - \sqrt{-\frac{b}{a}}\, b^2\right)\sinh(fx+e)\cosh(fx+e)^4 + \left(-2\sqrt{-\frac{b}{a}}\, a^2 + \sqrt{-\frac{b}{a}}\, a b\right.\right.$$

$$+\sqrt{-\frac{b}{a}}\,b^2\Big)\cosh(fx+e)^2\sinh(fx+e)+\sqrt{\frac{b\cosh(fx+e)^2}{a}+\frac{a-b}{a}}\,\sqrt{\cosh(fx+e)^2}\,b\left(a\,\mathrm{EllipticF}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)\right.$$

$$-\mathrm{EllipticF}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)b+\mathrm{EllipticE}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)a+\mathrm{EllipticE}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)b\Big)\cosh(fx+e)^2$$

$$+\sqrt{\frac{b\cosh(fx+e)^2}{a}+\frac{a-b}{a}}\,\sqrt{\cosh(fx+e)^2}\,\mathrm{EllipticF}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)a^2$$

$$-2\sqrt{\frac{b\cosh(fx+e)^2}{a}+\frac{a-b}{a}}\,\sqrt{\cosh(fx+e)^2}\,\mathrm{EllipticF}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)a\,b$$

$$+\sqrt{\frac{b\cosh(fx+e)^2}{a}+\frac{a-b}{a}}\,\sqrt{\cosh(fx+e)^2}\,\mathrm{EllipticF}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)b^2$$

$$+\sqrt{\frac{b\cosh(fx+e)^2}{a}+\frac{a-b}{a}}\,\sqrt{\cosh(fx+e)^2}\,\mathrm{EllipticE}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)a^2$$

$$-\sqrt{\frac{b\cosh(fx+e)^2}{a}+\frac{a-b}{a}}\,\sqrt{\cosh(fx+e)^2}\,\mathrm{EllipticE}\left(\sinh(fx+e)\sqrt{-\frac{b}{a}},\sqrt{\frac{a}{b}}\right)b^2\Big)$$

```
Problem 39: Unable to integrate problem.
```

$$\int \sinh(fx+e)^5\left(a+b\sinh(fx+e)^2\right)^p\,dx$$

```
Optimal(type 5, 224 leaves, 5 steps):
```

$$-\frac{(3a+2b(2+p))\cosh(fx+e)\left(a-b+b\cosh(fx+e)^2\right)^{1+p}}{b^2f(3+2p)(5+2p)}$$

$$+\frac{\left(3a^2+4ab(1+p)+4b^2\left(p^2+3p+2\right)\right)\cosh(fx+e)\left(a-b+b\cosh(fx+e)^2\right)^p\,\mathrm{hypergeom}\left(\left[\frac{1}{2},-p\right],\left[\frac{3}{2}\right],-\frac{b\cosh(fx+e)^2}{a-b}\right)}{b^2f(3+2p)(5+2p)\left(1+\frac{b\cosh(fx+e)^2}{a-b}\right)^p}$$

$$+\frac{\cosh(fx+e)\left(a-b+b\cosh(fx+e)^2\right)^{1+p}\sinh(fx+e)^2}{bf(5+2p)}$$

```
Result(type 8, 25 leaves):
```

$$\int \sinh(fx+e)^5\left(a+b\sinh(fx+e)^2\right)^p\,dx$$

```
Problem 40: Unable to integrate problem.
```

$$\int \sinh(fx+e)\left(a+b\sinh(fx+e)^2\right)^p\,dx$$

```
Optimal(type 5, 76 leaves, 3 steps):
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$$\frac{\cosh(fx+e)\,\left(a-b+b\cosh(fx+e)^2\right)^p \operatorname{hypergeom}\left(\left[\frac{1}{2}, -p\right], \left[\frac{3}{2}\right], -\frac{b\cosh(fx+e)^2}{a-b}\right)}{f\left(1+\frac{b\cosh(fx+e)^2}{a-b}\right)^p}$$

Result(type 8, 23 leaves):

$$\int \sinh(fx+e)\,\left(a+b\sinh(fx+e)^2\right)^p \,\mathrm{d}x$$

Problem 64: Result is not expressed in closed-form.

$$\int \frac{1}{a-b\sinh(dx+c)^4}\,\mathrm{d}x$$

Optimal(type 3, 79 leaves, 4 steps):

$$\frac{\operatorname{arctanh}\left(\frac{\sqrt{\sqrt{a}-\sqrt{b}}\,\tanh(dx+c)}{a^{1/4}}\right)}{2a^{3/4}d\sqrt{\sqrt{a}-\sqrt{b}}}+\frac{\operatorname{arctanh}\left(\frac{\sqrt{\sqrt{a}+\sqrt{b}}\,\tanh(dx+c)}{a^{1/4}}\right)}{2a^{3/4}d\sqrt{\sqrt{a}+\sqrt{b}}}$$

Result(type 7, 101 leaves):

$$\frac{\displaystyle\sum_{\_R=RootOf(a\_Z^8-4a\_Z^6+(6a-16b)\_Z^4-4a\_Z^2+a)}\frac{(-\_R^6+3\_R^4-3\_R^2+1)\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-\_R\right)}{\_R^7a-3\_R^5a+3\_R^3a-8\_R^3b-\_Ra}}{4d}$$

Problem 65: Result is not expressed in closed-form.

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

Optimal(type 3, 99 leaves, 6 steps):

$$-\frac{\coth(dx+c)}{ad}-\frac{\operatorname{arctanh}\left(\frac{\sqrt{\sqrt{a}-\sqrt{b}}\,\tanh(dx+c)}{a^{1/4}}\right)\sqrt{b}}{2a^{5/4}d\sqrt{\sqrt{a}-\sqrt{b}}}+\frac{\operatorname{arctanh}\left(\frac{\sqrt{\sqrt{a}+\sqrt{b}}\,\tanh(dx+c)}{a^{1/4}}\right)\sqrt{b}}{2a^{5/4}d\sqrt{\sqrt{a}+\sqrt{b}}}$$

Result(type 7, 134 leaves):

$$-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{2da}-\frac{b\left(\displaystyle\sum_{\_R=RootOf(a\_Z^8-4a\_Z^6+(6a-16b)\_Z^4-4a\_Z^2+a)}\frac{(\_R^4-\_R^2)\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-\_R\right)}{\_R^7a-3\_R^5a+3\_R^3a-8\_R^3b-\_Ra}\right)}{da}-\frac{1}{2da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}$$

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

$$\int \frac{\sinh(dx+c)^7}{\left(a-b\sinh(dx+c)^4\right)^2}\, dx$$

Optimal(type 3, 164 leaves, 5 steps):

$$-\frac{a\cosh(dx+c)\left(2-\cosh(dx+c)^2\right)}{4\,(a-b)\,b\,d\left(a-b+2\,b\cosh(dx+c)^2-b\cosh(dx+c)^4\right)}+\frac{\arctan\left(\frac{b^{1/4}\cosh(dx+c)}{\sqrt{\sqrt{a}-\sqrt{b}}}\right)\left(3\sqrt{a}-4\sqrt{b}\right)}{8\,b^{7/4}\,d\left(\sqrt{a}-\sqrt{b}\right)^{3/2}}$$
$$-\frac{\operatorname{arctanh}\left(\frac{b^{1/4}\cosh(dx+c)}{\sqrt{\sqrt{a}+\sqrt{b}}}\right)\left(3\sqrt{a}+4\sqrt{b}\right)}{8\,b^{7/4}\,d\left(\sqrt{a}+\sqrt{b}\right)^{3/2}}$$

Result(type 3, 1199 leaves):

$$-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2\sqrt{ab}}{4\,d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4-\frac{4\sqrt{ab}\,\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}{a}-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)(a-b)}$$
$$+\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2\sqrt{ab}}{2\,d\,a\,b\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4-\frac{4\sqrt{ab}\,\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}{a}-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)(a-b)}$$
$$-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}{4\,d\,b\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4-\frac{4\sqrt{ab}\,\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}{a}-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)(a-b)}$$
$$-\frac{1}{4\,d\,b\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4-\frac{4\sqrt{ab}\,\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}{a}-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)(a-b)}$$
$$+\frac{\sqrt{ab}}{4\,d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4-\frac{4\sqrt{ab}\,\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}{a}-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+1\right)(a-b)}$$

$$+\frac{3\,a\arctan\left(\frac{-2\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)^{2}a+4\sqrt{a\,b}+2\,a}{4\sqrt{-a\,b-\sqrt{a\,b}\,a}}\right)\sqrt{a\,b}}{8\,d\,b^{2}\,(a-b)\sqrt{-a\,b-\sqrt{a\,b}\,a}}-\frac{\arctan\left(\frac{-2\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)^{2}a+4\sqrt{a\,b}+2\,a}{4\sqrt{-a\,b-\sqrt{a\,b}\,a}}\right)\sqrt{a\,b}}{2\,d\,b\,(a-b)\sqrt{-a\,b-\sqrt{a\,b}\,a}}$$

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

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

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

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

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

$$+\frac{3\,a\arctan\left(\frac{2\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)^{2}a+4\sqrt{a\,b}-2\,a}{4\sqrt{-a\,b+\sqrt{a\,b}\,a}}\right)\sqrt{a\,b}}{8\,d\,b^{2}\,(a-b)\sqrt{-a\,b+\sqrt{a\,b}\,a}}-\frac{\arctan\left(\frac{2\tanh\left(\frac{d\,x}{2}+\frac{c}{2}\right)^{2}a+4\sqrt{a\,b}-2\,a}{4\sqrt{-a\,b+\sqrt{a\,b}\,a}}\right)\sqrt{a\,b}}{2\,d\,b\,(a-b)\sqrt{-a\,b+\sqrt{a\,b}\,a}}$$

$$-\frac{a\arctan\left(\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a+4\sqrt{ab}-2a}{4\sqrt{-ab+\sqrt{ab}\,a}}\right)}{8db(a-b)\sqrt{-ab+\sqrt{ab}\,a}}$$

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

$$\int \frac{\sinh(dx+c)^5}{\left(a-b\sinh(dx+c)^4\right)^2}\,dx$$

Optimal(type 3, 167 leaves, 5 steps):

$$\frac{\cosh(dx+c)\left(a+b-b\cosh(dx+c)^2\right)}{4(a-b)bd\left(a-b+2b\cosh(dx+c)^2-b\cosh(dx+c)^4\right)}-\frac{\arctan\left(\frac{b^{1/4}\cosh(dx+c)}{\sqrt{\sqrt{a}-\sqrt{b}}}\right)\left(\sqrt{a}-2\sqrt{b}\right)}{8b^{5/4}d\sqrt{a}\left(\sqrt{a}-\sqrt{b}\right)^{3/2}}$$
$$-\frac{\operatorname{arctanh}\left(\frac{b^{1/4}\cosh(dx+c)}{\sqrt{\sqrt{a}+\sqrt{b}}}\right)\left(\sqrt{a}+2\sqrt{b}\right)}{8b^{5/4}d\sqrt{a}\left(\sqrt{a}+\sqrt{b}\right)^{3/2}}$$

Result(type ?, 3169 leaves): Display of huge result suppressed!

Problem 68: Result is not expressed in closed-form.

$$\int \frac{\sinh(dx+c)^8}{\left(a-b\sinh(dx+c)^4\right)^2}\,dx$$

Optimal(type 3, 240 leaves, 14 steps):

$$\frac{x}{b^2}+\frac{a^{1/4}\operatorname{arctanh}\left(\frac{\sqrt{\sqrt{a}-\sqrt{b}}\tanh(dx+c)}{a^{1/4}}\right)}{8b^{3/2}d\left(\sqrt{a}-\sqrt{b}\right)^{3/2}}-\frac{a^{1/4}\operatorname{arctanh}\left(\frac{\sqrt{\sqrt{a}+\sqrt{b}}\tanh(dx+c)}{a^{1/4}}\right)}{8b^{3/2}d\left(\sqrt{a}+\sqrt{b}\right)^{3/2}}-\frac{a^{1/4}\operatorname{arctanh}\left(\frac{\sqrt{\sqrt{a}-\sqrt{b}}\tanh(dx+c)}{a^{1/4}}\right)}{2b^2d\sqrt{\sqrt{a}-\sqrt{b}}}$$
$$-\frac{a^{1/4}\operatorname{arctanh}\left(\frac{\sqrt{\sqrt{a}+\sqrt{b}}\tanh(dx+c)}{a^{1/4}}\right)}{2b^2d\sqrt{\sqrt{a}+\sqrt{b}}}-\frac{\tanh(dx+c)}{4(a-b)bd}+\frac{\tanh(dx+c)^5}{4bd\left(a-2a\tanh(dx+c)^2+(a-b)\tanh(dx+c)^4\right)}$$

Result(type 7, 573 leaves):

$$-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{db^2}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{db^2}$$

$$-\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^7}{2db\left(a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^8-4a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^6+6\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4a-16b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4-4\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a+a\right)(a-b)}$$

$$+\frac{5a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^5}{2db\left(a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^8-4a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^6+6\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4a-16b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4-4\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a+a\right)(a-b)}$$

$$+\frac{5a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^3}{2db\left(a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^8-4a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^6+6\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4a-16b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4-4\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a+a\right)(a-b)}$$

$$-\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{2db\left(a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^8-4a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^6+6\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4a-16b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4-4\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a+a\right)(a-b)}$$

$$+\frac{1}{16db^2}\left(a\left(\sum_{\_R=RootOf(a\_Z^8-4a\_Z^6+(6a-16b)\_Z^4-4a\_Z^2+a)}\frac{((4a-5b)\_R^6+(-12a+19b)\_R^4+(12a-19b)\_R^2-4a+5b)\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-\_R\right)}{(a-b)(\_R^7a-3\_R^5a+3\_R^3a-8\_R^3b-\_Ra)}\right)\right)$$

```
Problem 69: Result is not expressed in closed-form.
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$$\int\frac{\sinh(dx+c)^2}{(a-b\sinh(dx+c)^4)^2}\,dx$$

```
Optimal(type 3, 170 leaves, 5 steps):
```

$$-\frac{\operatorname{arctanh}\left(\frac{\sqrt{\sqrt{a}-\sqrt{b}}\tanh(dx+c)}{a^{1/4}}\right)(2\sqrt{a}-\sqrt{b})}{8a^{5/4}d(\sqrt{a}-\sqrt{b})^{3/2}\sqrt{b}}+\frac{\operatorname{arctanh}\left(\frac{\sqrt{\sqrt{a}+\sqrt{b}}\tanh(dx+c)}{a^{1/4}}\right)(2\sqrt{a}+\sqrt{b})}{8a^{5/4}d\sqrt{b}(\sqrt{a}+\sqrt{b})^{3/2}}$$

$$+\frac{\tanh(dx+c)(a-(a+b)\tanh(dx+c)^2)}{4a(a-b)d(a-2a\tanh(dx+c)^2+(a-b)\tanh(dx+c)^4)}$$

```
Result(type 7, 707 leaves):
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$$\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{7}}{2d\left(a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{8}-4a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{6}+6\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}a-16b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}-4\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}a+a\right)(a-b)}$$

$$-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{5}}{2d\left(a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{8}-4a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{6}+6\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}a-16b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}-4\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}a+a\right)(a-b)}$$

$$-\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{5}b}{d\left(a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{8}-4a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{6}+6\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}a-16b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}-4\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}a+a\right)a(a-b)}$$

$$-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{3}}{2d\left(a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{8}-4a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{6}+6\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}a-16b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}-4\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}a+a\right)(a-b)}$$

$$-\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{3}b}{d\left(a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{8}-4a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{6}+6\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}a-16b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}-4\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}a+a\right)a(a-b)}$$

$$+\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{2d\left(a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{8}-4a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{6}+6\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}a-16b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}-4\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}a+a\right)(a-b)}$$

$$-\frac{\displaystyle\sum_{\_R=RootOf(a\_Z^8-4a\_Z^6+(6a-16b)\_Z^4-4a\_Z^2+a)}\frac{(-a\_R^6+(11a-4b)\_R^4+(-11a+4b)\_R^2+a)\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-\_R\right)}{(a-b)(\_R^7a-3\_R^5a+3\_R^3a-8\_R^3b-\_Ra)}}{16da}$$

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

$$\int\frac{\operatorname{csch}(dx+c)}{(a-b\sinh(dx+c)^4)^3}\,dx$$

Optimal(type 3, 487 leaves, 16 steps):

$$-\frac{\operatorname{arctanh}(\cosh(dx+c))}{a^3d}-\frac{b\cosh(dx+c)\left(2-\cosh(dx+c)^2\right)}{8a(a-b)d\left(a-b+2b\cosh(dx+c)^2-b\cosh(dx+c)^4\right)^2}$$

$$-\frac{b\cosh(dx+c)\left(2-\cosh(dx+c)^2\right)}{4a^2(a-b)d\left(a-b+2b\cosh(dx+c)^2-b\cosh(dx+c)^4\right)}-\frac{b\cosh(dx+c)\left(11a+b-(5a+b)\cosh(dx+c)^2\right)}{32a^2(a-b)^2d\left(a-b+2b\cosh(dx+c)^2-b\cosh(dx+c)^4\right)}$$

$$- \frac{b^{1/4} \arctan\left(\frac{b^{1/4} \cosh(dx+c)}{\sqrt{\sqrt{a}-\sqrt{b}}}\right) \left(5\sqrt{a}-2\sqrt{b}\right)}{64 a^{5/2} d \left(\sqrt{a}-\sqrt{b}\right)^{5/2}} - \frac{b^{1/4} \arctan\left(\frac{b^{1/4} \cosh(dx+c)}{\sqrt{\sqrt{a}-\sqrt{b}}}\right)}{8 a^{5/2} d \left(\sqrt{a}-\sqrt{b}\right)^{3/2}} + \frac{b^{1/4} \operatorname{arctanh}\left(\frac{b^{1/4} \cosh(dx+c)}{\sqrt{\sqrt{a}+\sqrt{b}}}\right)}{8 a^{5/2} d \left(\sqrt{a}+\sqrt{b}\right)^{3/2}}$$

$$+ \frac{b^{1/4} \operatorname{arctanh}\left(\frac{b^{1/4} \cosh(dx+c)}{\sqrt{\sqrt{a}+\sqrt{b}}}\right) \left(5\sqrt{a}+2\sqrt{b}\right)}{64 a^{5/2} d \left(\sqrt{a}+\sqrt{b}\right)^{5/2}} - \frac{b^{1/4} \arctan\left(\frac{b^{1/4} \cosh(dx+c)}{\sqrt{\sqrt{a}-\sqrt{b}}}\right)}{2 a^3 d \sqrt{\sqrt{a}-\sqrt{b}}} + \frac{b^{1/4} \operatorname{arctanh}\left(\frac{b^{1/4} \cosh(dx+c)}{\sqrt{\sqrt{a}+\sqrt{b}}}\right)}{2 a^3 d \sqrt{\sqrt{a}+\sqrt{b}}}$$

Result(type ?, 8619 leaves): Display of huge result suppressed!

Problem 71: Result is not expressed in closed-form.

$$\int \frac{\sinh(dx+c)^8}{\left(a-b\sinh(dx+c)^4\right)^3}\, dx$$

Optimal(type 3, 263 leaves, 9 steps):

$$- \frac{\operatorname{arctanh}\left(\frac{\sqrt{\sqrt{a}-\sqrt{b}}\, \tanh(dx+c)}{a^{1/4}}\right) \left(2\sqrt{a}-5\sqrt{b}\right)}{64 a^{3/4} b^{3/2} d \left(\sqrt{a}-\sqrt{b}\right)^{5/2}} + \frac{\operatorname{arctanh}\left(\frac{\sqrt{\sqrt{a}+\sqrt{b}}\, \tanh(dx+c)}{a^{1/4}}\right) \left(2\sqrt{a}+5\sqrt{b}\right)}{64 a^{3/4} b^{3/2} d \left(\sqrt{a}+\sqrt{b}\right)^{5/2}} - \frac{(a+5b)\tanh(dx+c)}{32 a (a-b)^2 b d}$$

$$- \frac{\tanh(dx+c)^3}{32 a (a-b) b d} + \frac{\tanh(dx+c)^9}{8 a d \left(a-2a\tanh(dx+c)^2+(a-b)\tanh(dx+c)^4\right)^2} - \frac{\operatorname{sech}(dx+c)^2 \tanh(dx+c)^5}{32 a b d \left(a-2a\tanh(dx+c)^2+(a-b)\tanh(dx+c)^4\right)}$$

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

Problem 72: Result is not expressed in closed-form.

$$\int \frac{\operatorname{csch}(dx+c)^2}{\left(a-b\sinh(dx+c)^4\right)^3}\, dx$$

Optimal(type 3, 307 leaves, 8 steps):

$$- \frac{\coth(dx+c)}{a^3 d} - \frac{3 \operatorname{arctanh}\left(\frac{\sqrt{\sqrt{a}-\sqrt{b}}\, \tanh(dx+c)}{a^{1/4}}\right) \sqrt{b} \left(20a+15b-34\sqrt{a}\sqrt{b}\right)}{64 a^{13/4} d \left(\sqrt{a}-\sqrt{b}\right)^{5/2}}$$

$$+ \frac{3 \operatorname{arctanh}\left(\frac{\sqrt{\sqrt{a}+\sqrt{b}}\, \tanh(dx+c)}{a^{1/4}}\right) \sqrt{b} \left(20a+15b+34\sqrt{a}\sqrt{b}\right)}{64 a^{13/4} d \left(\sqrt{a}+\sqrt{b}\right)^{5/2}} + \frac{b^2 \tanh(dx+c) \left(a(a+3b) - \left(a^2+6ab+b^2\right)\tanh(dx+c)^2\right)}{8 a^2 (a-b)^3 d \left(a-2a\tanh(dx+c)^2+(a-b)\tanh(dx+c)^4\right)^2}$$

$$+ \frac{b \tanh(dx+c) \left(\frac{2a^2 (9a-17b)}{(a-b)^3} - \frac{\left(18a^2+15ab-13b^2\right)\tanh(dx+c)^2}{(a-b)^2}\right)}{32 a^3 d \left(a-2a\tanh(dx+c)^2+(a-b)\tanh(dx+c)^4\right)}$$

Result(type ?, 2746 leaves): Display of huge result suppressed!

Problem 73: Result is not expressed in closed-form.

$$\int \frac{1}{a+b\sinh(x)^5}\, dx$$

Optimal(type 3, 280 leaves, 17 steps):

$$-\frac{2(-1)^{9/10}\operatorname{arctanh}\left(\frac{I b^{1/5}-(-1)^{9/10}a^{1/5}\tanh\left(\frac{x}{2}\right)}{\sqrt{-(-1)^{4/5}a^{2/5}-b^{2/5}}}\right)}{5a^{4/5}\sqrt{-(-1)^{4/5}a^{2/5}-b^{2/5}}}-\frac{2\operatorname{arctanh}\left(\frac{b^{1/5}-a^{1/5}\tanh\left(\frac{x}{2}\right)}{\sqrt{a^{2/5}+b^{2/5}}}\right)}{5a^{4/5}\sqrt{a^{2/5}+b^{2/5}}}$$
$$+\frac{2(-1)^{1/5}\operatorname{arctanh}\left(\frac{b^{1/5}+(-1)^{1/5}a^{1/5}\tanh\left(\frac{x}{2}\right)}{\sqrt{(-1)^{2/5}a^{2/5}+b^{2/5}}}\right)}{5a^{4/5}\sqrt{(-1)^{2/5}a^{2/5}+b^{2/5}}}+\frac{2(-1)^{9/10}\operatorname{arctanh}\left(\frac{(-1)^{9/10}\left((-1)^{1/5}b^{1/5}+a^{1/5}\tanh\left(\frac{x}{2}\right)\right)}{\sqrt{-(-1)^{4/5}a^{2/5}+(-1)^{1/5}b^{2/5}}}\right)}{5a^{4/5}\sqrt{-(-1)^{4/5}a^{2/5}+(-1)^{1/5}b^{2/5}}}$$
$$+\frac{2(-1)^{9/10}\operatorname{arctanh}\left(\frac{(-1)^{3/10}\left(b^{1/5}+(-1)^{3/5}a^{1/5}\tanh\left(\frac{x}{2}\right)\right)}{\sqrt{-(-1)^{4/5}a^{2/5}+(-1)^{3/5}b^{2/5}}}\right)}{5a^{4/5}\sqrt{-(-1)^{4/5}a^{2/5}+(-1)^{3/5}b^{2/5}}}$$

Result(type 7, 112 leaves):

$$\frac{\left(\sum_{\_R=RootOf(a\_Z^{10}-5a\_Z^{8}+10a\_Z^{6}-32b\_Z^{5}-10a\_Z^{4}+5a\_Z^{2}-a)}\frac{(-\_R^{8}+4\_R^{6}-6\_R^{4}+4\_R^{2}-1)\ln\left(\tanh\left(\frac{x}{2}\right)-\_R\right)}{\_R^{9}a-4\_R^{7}a+6\_R^{5}a-16\_R^{4}b-4\_R^{3}a+\_R a}\right)}{5}$$

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

$$\int \frac{\operatorname{sech}(x)}{a+a\sinh(x)^2}\, dx$$

Optimal(type 3, 18 leaves, 3 steps):

$$\frac{\arctan(\sinh(x))}{2a}+\frac{\operatorname{sech}(x)\tanh(x)}{2a}$$

Result(type 3, 49 leaves):

$$-\frac{\tanh\left(\frac{x}{2}\right)^3}{a\left(\tanh\left(\frac{x}{2}\right)^2+1\right)^2}+\frac{\tanh\left(\frac{x}{2}\right)}{a\left(\tanh\left(\frac{x}{2}\right)^2+1\right)^2}+\frac{\arctan\left(\tanh\left(\frac{x}{2}\right)\right)}{a}$$

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

$$\int \frac{\operatorname{sech}(x)^3}{a + a\sinh(x)^2}\, dx$$

Optimal(type 3, 29 leaves, 4 steps):

$$\frac{3\arctan(\sinh(x))}{8a} + \frac{3\operatorname{sech}(x)\tanh(x)}{8a} + \frac{\operatorname{sech}(x)^3\tanh(x)}{4a}$$

Result(type 3, 93 leaves):

$$-\frac{5\tanh\left(\frac{x}{2}\right)^7}{4a\left(\tanh\left(\frac{x}{2}\right)^2+1\right)^4} + \frac{3\tanh\left(\frac{x}{2}\right)^5}{4a\left(\tanh\left(\frac{x}{2}\right)^2+1\right)^4} - \frac{3\tanh\left(\frac{x}{2}\right)^3}{4a\left(\tanh\left(\frac{x}{2}\right)^2+1\right)^4} + \frac{5\tanh\left(\frac{x}{2}\right)}{4a\left(\tanh\left(\frac{x}{2}\right)^2+1\right)^4} + \frac{3\arctan\left(\tanh\left(\frac{x}{2}\right)\right)}{4a}$$

Problem 78: Result more than twice size of optimal antiderivative.

$$\int \operatorname{sech}(dx+c)^3\left(a + b\sinh(dx+c)^2\right) dx$$

Optimal(type 3, 38 leaves, 3 steps):

$$\frac{(a+b)\arctan(\sinh(dx+c))}{2d} + \frac{(a-b)\operatorname{sech}(dx+c)\tanh(dx+c)}{2d}$$

Result(type 3, 81 leaves):

$$\frac{a\operatorname{sech}(dx+c)\tanh(dx+c)}{2d} + \frac{a\arctan\left(e^{dx+c}\right)}{d} - \frac{b\sinh(dx+c)}{d\cosh(dx+c)^2} + \frac{b\operatorname{sech}(dx+c)\tanh(dx+c)}{2d} + \frac{b\arctan\left(e^{dx+c}\right)}{d}$$

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

$$\int \operatorname{sech}(dx+c)^3\left(a + b\sinh(dx+c)^2\right)^2 dx$$

Optimal(type 3, 60 leaves, 5 steps):

$$\frac{(a-b)(a+3b)\arctan(\sinh(dx+c))}{2d} + \frac{b^2\sinh(dx+c)}{d} + \frac{(a-b)^2\operatorname{sech}(dx+c)\tanh(dx+c)}{2d}$$

Result(type 3, 168 leaves):

$$\frac{a^2\operatorname{sech}(dx+c)\tanh(dx+c)}{2d} + \frac{a^2\arctan\left(e^{dx+c}\right)}{d} - \frac{2ab\sinh(dx+c)}{d\cosh(dx+c)^2} + \frac{ab\operatorname{sech}(dx+c)\tanh(dx+c)}{d} + \frac{2ab\arctan\left(e^{dx+c}\right)}{d} + \frac{b^2\sinh(dx+c)^3}{d\cosh(dx+c)^2}$$
$$+ \frac{3b^2\sinh(dx+c)}{d\cosh(dx+c)^2} - \frac{3b^2\operatorname{sech}(dx+c)\tanh(dx+c)}{2d} - \frac{3b^2\arctan\left(e^{dx+c}\right)}{d}$$

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

$$\int \operatorname{sech}(dx+c)^6\left(a + b\sinh(dx+c)^2\right)^2 dx$$

Optimal(type 3, 53 leaves, 3 steps):

$$\frac{a^2 \tanh(dx+c)}{d} - \frac{2a(a-b)\tanh(dx+c)^3}{3d} + \frac{(a-b)^2\tanh(dx+c)^5}{5d}$$

Result(type 3, 157 leaves):

$$\frac{1}{d}\left(a^2\left(\frac{8}{15}+\frac{\operatorname{sech}(dx+c)^4}{5}+\frac{4\operatorname{sech}(dx+c)^2}{15}\right)\tanh(dx+c)+2ab\left(-\frac{\sinh(dx+c)}{4\cosh(dx+c)^5}+\frac{\left(\frac{8}{15}+\frac{\operatorname{sech}(dx+c)^4}{5}+\frac{4\operatorname{sech}(dx+c)^2}{15}\right)\tanh(dx+c)}{4}\right)+b^2\left(-\frac{\sinh(dx+c)^3}{2\cosh(dx+c)^5}-\frac{3\sinh(dx+c)}{8\cosh(dx+c)^5}+\frac{3\left(\frac{8}{15}+\frac{\operatorname{sech}(dx+c)^4}{5}+\frac{4\operatorname{sech}(dx+c)^2}{15}\right)\tanh(dx+c)}{8}\right)\right)$$

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

$$\int \operatorname{sech}(dx+c)^5\left(a+b\sinh(dx+c)^2\right)^3 dx$$

Optimal(type 3, 97 leaves, 6 steps):

$$\frac{3(a-b)\left(4b^2+(a+b)^2\right)\arctan(\sinh(dx+c))}{8d}+\frac{b^3\sinh(dx+c)}{d}+\frac{3(a-b)^2(a+3b)\operatorname{sech}(dx+c)\tanh(dx+c)}{8d}+\frac{(a-b)^3\operatorname{sech}(dx+c)^3\tanh(dx+c)}{4d}$$

Result(type 3, 375 leaves):

$$\frac{a^3\tanh(dx+c)\operatorname{sech}(dx+c)^3}{4d}+\frac{3a^3\operatorname{sech}(dx+c)\tanh(dx+c)}{8d}+\frac{3a^3\arctan\left(e^{dx+c}\right)}{4d}-\frac{a^2b\sinh(dx+c)}{d\cosh(dx+c)^4}+\frac{a^2b\tanh(dx+c)\operatorname{sech}(dx+c)^3}{4d}+\frac{3a^2b\operatorname{sech}(dx+c)\tanh(dx+c)}{8d}+\frac{3a^2b\arctan\left(e^{dx+c}\right)}{4d}-\frac{3b^2a\sinh(dx+c)^3}{d\cosh(dx+c)^4}-\frac{3b^2a\sinh(dx+c)}{d\cosh(dx+c)^4}+\frac{3b^2a\tanh(dx+c)\operatorname{sech}(dx+c)^3}{4d}+\frac{9b^2a\operatorname{sech}(dx+c)\tanh(dx+c)}{8d}+\frac{9b^2a\arctan\left(e^{dx+c}\right)}{4d}+\frac{b^3\sinh(dx+c)^5}{d\cosh(dx+c)^4}+\frac{5b^3\sinh(dx+c)^3}{d\cosh(dx+c)^4}+\frac{5b^3\sinh(dx+c)}{d\cosh(dx+c)^4}-\frac{5b^3\tanh(dx+c)\operatorname{sech}(dx+c)^3}{4d}-\frac{15b^3\operatorname{sech}(dx+c)\tanh(dx+c)}{8d}-\frac{15b^3\arctan\left(e^{dx+c}\right)}{4d}$$

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

$$\int \frac{\cosh(dx+c)^7}{a+b\sinh(dx+c)^2}\, dx$$

Optimal(type 3, 96 leaves, 4 steps):

$$\frac{\left(a^{2}-3ab+3b^{2}\right)\sinh(dx+c)}{b^{3}d}-\frac{(a-3b)\sinh(dx+c)^{3}}{3b^{2}d}+\frac{\sinh(dx+c)^{5}}{5bd}-\frac{(a-b)^{3}\arctan\left(\frac{\sinh(dx+c)\sqrt{b}}{\sqrt{a}}\right)}{b^{7/2}d\sqrt{a}}$$

Result(type 3, 1655 leaves):

$$\frac{3a^{2}\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)}{db^{2}\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}-\frac{3a\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)}{db\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}-\frac{3a^{2}\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)}{db^{2}\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}$$

$$+\frac{3a\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)}{db\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}-\frac{4a\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)}{d\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}$$

$$-\frac{4a\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)}{d\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}-\frac{11}{8db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^{2}}+\frac{11}{8db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^{2}}$$

$$-\frac{1}{2db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^{4}}-\frac{5}{4db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^{3}}+\frac{1}{2db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^{4}}-\frac{5}{4db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^{3}}$$

$$+\frac{a^{4}\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)}{db^{3}\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}+\frac{6a^{2}\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)}{db\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}$$

$$+\frac{a^{4}\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)}{db^{3}\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}+\frac{6a^{2}\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)}{db\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}$$

$$+\frac{\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)b}{d\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}+\frac{\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)b}{d\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}$$

$$-\frac{a^3\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)}{d\,b^3\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}+\frac{a^3\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)}{d\,b^3\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}-\frac{1}{5\,d\,b\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^5}$$

$$-\frac{1}{5\,d\,b\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^5}-\frac{3}{d\,b\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{3}{d\,b\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}+\frac{3a}{d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}$$

$$+\frac{3a}{d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}+\frac{\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)}{d\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}-\frac{\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)}{d\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}$$

$$-\frac{4a^3\arctan\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}\right)}{d\,b^2\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}-a+2b\right)a}}-\frac{4a^3\operatorname{arctanh}\left(\frac{a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}\right)}{d\,b^2\sqrt{-(a-b)b}\sqrt{\left(2\sqrt{-(a-b)b}+a-2b\right)a}}+\frac{a}{3\,d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^3}$$

$$+\frac{a}{2\,d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^2}-\frac{a^2}{d\,b^3\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}+\frac{a}{3\,d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^3}-\frac{a}{2\,d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^2}$$

$$-\frac{a^2}{d\,b^3\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}$$

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

$$\int\frac{\operatorname{sech}(dx+c)^5}{a+b\sinh(dx+c)^2}\,dx$$

Optimal(type 3, 124 leaves, 6 steps):

$$\frac{\left(3a^2-10ab+15b^2\right)\arctan(\sinh(dx+c))}{8\,(a-b)^3\,d}-\frac{b^{5/2}\arctan\left(\frac{\sinh(dx+c)\sqrt{b}}{\sqrt{a}}\right)}{(a-b)^3\,d\sqrt{a}}+\frac{(3a-7b)\operatorname{sech}(dx+c)\tanh(dx+c)}{8\,(a-b)^2\,d}$$

$$+\frac{\operatorname{sech}(dx+c)^3\tanh(dx+c)}{4\,(a-b)\,d}$$

Result(type 3, 1022 leaves):

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

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

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

$$-\frac{5 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{7} a^{2}}{4 d (a-b)^{3} \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}+1\right)^{4}}+\frac{7 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{7} a b}{2 d (a-b)^{3} \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}+1\right)^{4}}-\frac{9 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{7} b^{2}}{4 d (a-b)^{3} \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}+1\right)^{4}}$$

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

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

$$+\frac{5 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right) a^{2}}{4 d (a-b)^{3} \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}+1\right)^{4}}-\frac{7 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right) a b}{2 d (a-b)^{3} \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}+1\right)^{4}}+\frac{9 \tanh\left(\frac{d x}{2}+\frac{c}{2}\right) b^{2}}{4 d (a-b)^{3} \left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)^{2}+1\right)^{4}}$$

$$+\frac{3 \arctan\left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)\right) a^{2}}{4 d (a-b)^{3}}-\frac{5 \arctan\left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)\right) a b}{2 d (a-b)^{3}}+\frac{15 \arctan\left(\tanh\left(\frac{d x}{2}+\frac{c}{2}\right)\right) b^{2}}{4 d (a-b)^{3}}$$

Problem 86: Result more than twice size of optimal antiderivative.

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

Optimal(type 3, 92 leaves, 5 steps):

$$-\frac{\left(3 a^{2}-2 a b-b^{2}\right) \arctan\left(\frac{\sinh(d x+c) \sqrt{b}}{\sqrt{a}}\right)}{2 a^{3/2} b^{5/2} d}+\frac{\sinh(d x+c)}{b^{2} d}+\frac{(a-b)^{2} \sinh(d x+c)}{2 a b^{2} d\left(a+b \sinh(d x+c)^{2}\right)}$$

Result(type 3, 1538 leaves):

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

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

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

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

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

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

$$-\frac{5 a^{2} \arctan\left(\frac{\tanh\left(\frac{d x}{2}+\frac{c}{2}\right) a}{\sqrt{-a^{2}+2 a b+2 \sqrt{-a^{2} b (a-b)}}}\right)}{2 d b \sqrt{-a^{2} b (a-b)} \sqrt{-a^{2}+2 a b+2 \sqrt{-a^{2} b (a-b)}}}+\frac{a \arctan\left(\frac{\tanh\left(\frac{d x}{2}+\frac{c}{2}\right) a}{\sqrt{-a^{2}+2 a b+2 \sqrt{-a^{2} b (a-b)}}}\right)}{2 d \sqrt{-a^{2} b (a-b)} \sqrt{-a^{2}+2 a b+2 \sqrt{-a^{2} b (a-b)}}}$$

$$+\frac{\arctan\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{-a^2+2ab+2\sqrt{-a^2b(a-b)}}}\right)b}{2d\sqrt{-a^2b(a-b)}\sqrt{-a^2+2ab+2\sqrt{-a^2b(a-b)}}}-\frac{3a\arctan\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{-a^2+2ab+2\sqrt{-a^2b(a-b)}}}\right)}{2db^2\sqrt{-a^2+2ab+2\sqrt{-a^2b(a-b)}}}$$

$$+\frac{\arctan\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{-a^2+2ab+2\sqrt{-a^2b(a-b)}}}\right)}{db\sqrt{-a^2+2ab+2\sqrt{-a^2b(a-b)}}}+\frac{\arctan\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{-a^2+2ab+2\sqrt{-a^2b(a-b)}}}\right)}{2da\sqrt{-a^2+2ab+2\sqrt{-a^2b(a-b)}}}$$

$$+\frac{3a^3\operatorname{arctanh}\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}\right)}{2db^2\sqrt{-a^2b(a-b)}\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}-\frac{5a^2\operatorname{arctanh}\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}\right)}{2db\sqrt{-a^2b(a-b)}\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}$$

$$+\frac{a\operatorname{arctanh}\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}\right)}{2d\sqrt{-a^2b(a-b)}\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}+\frac{\operatorname{arctanh}\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}\right)b}{2d\sqrt{-a^2b(a-b)}\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}$$

$$+\frac{3a\operatorname{arctanh}\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}\right)}{2db^2\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}-\frac{\operatorname{arctanh}\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}\right)}{db\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}-\frac{\operatorname{arctanh}\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}\right)}{2da\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}$$

$$-\frac{1}{db^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{1}{db^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}$$

Problem 87: Result more than twice size of optimal antiderivative.

$$\int\frac{\cosh(dx+c)^3}{\left(a+b\sinh(dx+c)^2\right)^2}\,dx$$

Optimal(type 3, 65 leaves, 3 steps):

$$\frac{(a+b)\arctan\left(\frac{\sinh(dx+c)\sqrt{b}}{\sqrt{a}}\right)}{2a^{3/2}b^{3/2}d}-\frac{(a-b)\sinh(dx+c)}{2abd\left(a+b\sinh(dx+c)^2\right)}$$

Result(type 3, 1013 leaves):

$$
\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^3}{d\,b\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a+4\,b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+a\right)}
-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^3}{d\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a+4\,b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+a\right)a}
-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{d\,b\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a+4\,b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+a\right)}
+\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{d\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a+4\,b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+a\right)a}
-\frac{a^2 b\,\mathrm{arctanh}\left(\frac{a\,b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(a^2 b-2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}\right)}{2\,d\sqrt{-a^2 b^3\,(a-b)}\sqrt{\left(a^2 b-2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}
-\frac{\mathrm{arctanh}\left(\frac{a\,b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(a^2 b-2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}\right)}{2\,d\sqrt{\left(a^2 b-2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}
-\frac{a^2 b\arctan\left(\frac{a\,b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(-a^2 b+2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}\right)}{2\,d\sqrt{-a^2 b^3\,(a-b)}\sqrt{\left(-a^2 b+2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}
+\frac{\arctan\left(\frac{a\,b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(-a^2 b+2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}\right)}{2\,d\sqrt{\left(-a^2 b+2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}
+\frac{b^3\,\mathrm{arctanh}\left(\frac{a\,b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(a^2 b-2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}\right)}{2\,d\sqrt{-a^2 b^3\,(a-b)}\sqrt{\left(a^2 b-2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}
-\frac{b\,\mathrm{arctanh}\left(\frac{a\,b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(a^2 b-2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}\right)}{2\,d\,a\sqrt{\left(a^2 b-2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}
+\frac{b^3\arctan\left(\frac{a\,b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(-a^2 b+2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}\right)}{2\,d\sqrt{-a^2 b^3\,(a-b)}\sqrt{\left(-a^2 b+2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}
+\frac{b\arctan\left(\frac{a\,b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{\sqrt{\left(-a^2 b+2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}\right)}{2\,d\,a\sqrt{\left(-a^2 b+2\,b^2 a+2\sqrt{-a^2 b^3\,(a-b)}\right)b}}
$$

Problem 88: Result more than twice size of optimal antiderivative.

$$\int \frac{\cosh(dx+c)^2}{\left(a+b\sinh(dx+c)^2\right)^2}\,dx$$

Optimal(type 3, 67 leaves, 3 steps):

$$\frac{\operatorname{arctanh}\left(\frac{\sqrt{a-b}\,\tanh(dx+c)}{\sqrt{a}}\right)}{2a^{3/2}d\sqrt{a-b}}+\frac{\tanh(dx+c)}{2ad\left(a-(a-b)\tanh(dx+c)^2\right)}$$

Result(type 3, 435 leaves):

$$\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^3}{d\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a+4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+a\right)a}$$

$$+\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{d\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a+4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2+a\right)a}-\frac{\arctan\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{-a^2+2ab+2\sqrt{-a^2b(a-b)}}}\right)b}{2d\sqrt{-a^2b(a-b)}\sqrt{-a^2+2ab+2\sqrt{-a^2b(a-b)}}}$$

$$-\frac{\arctan\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{-a^2+2ab+2\sqrt{-a^2b(a-b)}}}\right)}{2da\sqrt{-a^2+2ab+2\sqrt{-a^2b(a-b)}}}-\frac{\operatorname{arctanh}\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}\right)b}{2d\sqrt{-a^2b(a-b)}\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}$$

$$+\frac{\operatorname{arctanh}\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}\right)}{2da\sqrt{a^2-2ab+2\sqrt{-a^2b(a-b)}}}$$

Problem 89: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{sech}(dx+c)}{\left(a+b\sinh(dx+c)^2\right)^2}\,dx$$

Optimal(type 3, 94 leaves, 5 steps):

$$\frac{\arctan(\sinh(dx+c))}{(a-b)^2d}-\frac{b\sinh(dx+c)}{2a(a-b)d\left(a+b\sinh(dx+c)^2\right)}-\frac{(3a-b)\arctan\left(\frac{\sinh(dx+c)\sqrt{b}}{\sqrt{a}}\right)\sqrt{b}}{2a^{3/2}(a-b)^2d}$$

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Result(type 3, 1177 leaves):
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$$\frac{b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{3}}{d(a-b)^{2}\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}a+4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}+a\right)}$$

$$-\frac{b^{2}\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{3}}{d(a-b)^{2}\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}a+4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}+a\right)a}$$

$$-\frac{b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{d(a-b)^{2}\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}a+4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}+a\right)}$$

$$+\frac{b^{2}\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{d(a-b)^{2}\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{4}a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}a+4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}+a\right)a}$$

$$+\frac{3ba^{2}\arctan\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{-a^{2}+2ab+2\sqrt{-a^{2}b(a-b)}}}\right)}{2d(a-b)^{2}\sqrt{-a^{2}b(a-b)}\sqrt{-a^{2}+2ab+2\sqrt{-a^{2}b(a-b)}}}-\frac{2b^{2}a\arctan\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{-a^{2}+2ab+2\sqrt{-a^{2}b(a-b)}}}\right)}{d(a-b)^{2}\sqrt{-a^{2}b(a-b)}\sqrt{-a^{2}+2ab+2\sqrt{-a^{2}b(a-b)}}}$$

$$-\frac{3b\arctan\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{-a^{2}+2ab+2\sqrt{-a^{2}b(a-b)}}}\right)}{2d(a-b)^{2}\sqrt{-a^{2}+2ab+2\sqrt{-a^{2}b(a-b)}}}+\frac{3ba^{2}\operatorname{arctanh}\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{a^{2}-2ab+2\sqrt{-a^{2}b(a-b)}}}\right)}{2d(a-b)^{2}\sqrt{-a^{2}b(a-b)}\sqrt{a^{2}-2ab+2\sqrt{-a^{2}b(a-b)}}}$$

$$-\frac{2b^{2}a\operatorname{arctanh}\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{a^{2}-2ab+2\sqrt{-a^{2}b(a-b)}}}\right)}{d(a-b)^{2}\sqrt{-a^{2}b(a-b)}\sqrt{a^{2}-2ab+2\sqrt{-a^{2}b(a-b)}}}+\frac{3b\operatorname{arctanh}\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{a^{2}-2ab+2\sqrt{-a^{2}b(a-b)}}}\right)}{2d(a-b)^{2}\sqrt{a^{2}-2ab+2\sqrt{-a^{2}b(a-b)}}}$$

$$+\frac{b^{3}\arctan\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{-a^{2}+2ab+2\sqrt{-a^{2}b(a-b)}}}\right)}{2d(a-b)^{2}\sqrt{-a^{2}b(a-b)}\sqrt{-a^{2}+2ab+2\sqrt{-a^{2}b(a-b)}}}+\frac{b^{2}\arctan\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a}{\sqrt{-a^{2}+2ab+2\sqrt{-a^{2}b(a-b)}}}\right)}{2d(a-b)^{2}a\sqrt{-a^{2}+2ab+2\sqrt{-a^{2}b(a-b)}}}$$

$$+\frac{b^3 \operatorname{arctanh}\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right) a}{\sqrt{a^2-2ab+2\sqrt{-a^2 b (a-b)}}}\right)}{2 d (a-b)^2 \sqrt{-a^2 b (a-b)}\,\sqrt{a^2-2ab+2\sqrt{-a^2 b (a-b)}}} - \frac{b^2 \operatorname{arctanh}\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right) a}{\sqrt{a^2-2ab+2\sqrt{-a^2 b (a-b)}}}\right)}{2 d (a-b)^2 a \sqrt{a^2-2ab+2\sqrt{-a^2 b (a-b)}}} + \frac{2 \arctan\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d (a-b)^2}$$

Problem 90: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{sech}(dx+c)^3}{\left(a+b\sinh(dx+c)^2\right)^2}\, dx$$

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

$$\frac{(a-5b)\arctan(\sinh(dx+c))}{2(a-b)^3 d} + \frac{(5a-b)\, b^{3/2} \arctan\left(\frac{\sinh(dx+c)\sqrt{b}}{\sqrt{a}}\right)}{2 a^{3/2} (a-b)^3 d} + \frac{b(a+b)\sinh(dx+c)}{2a(a-b)^2 d\left(a+b\sinh(dx+c)^2\right)}$$
$$+ \frac{\operatorname{sech}(dx+c)\tanh(dx+c)}{2(a-b)\, d\left(a+b\sinh(dx+c)^2\right)}$$

Result(type 3, 1362 leaves):

$$-\frac{b^2 \tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^3}{d(a-b)^3 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a - 2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a + 4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 + a\right)}$$
$$+ \frac{b^3 \tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^3}{d(a-b)^3 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a - 2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a + 4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 + a\right) a}$$
$$+ \frac{b^2 \tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{d(a-b)^3 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a - 2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a + 4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 + a\right)}$$
$$- \frac{b^3 \tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{d(a-b)^3 \left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^4 a - 2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a + 4b\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 + a\right) a}$$
$$- \frac{5 b^2 a^2 \arctan\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right) a}{\sqrt{-a^2+2ab+2\sqrt{-a^2 b(a-b)}}}\right)}{2d(a-b)^3\sqrt{-a^2 b(a-b)}\,\sqrt{-a^2+2ab+2\sqrt{-a^2 b(a-b)}}} + \frac{3 b^3 a \arctan\left(\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right) a}{\sqrt{-a^2+2ab+2\sqrt{-a^2 b(a-b)}}}\right)}{d(a-b)^3\sqrt{-a^2 b(a-b)}\,\sqrt{-a^2+2ab+2\sqrt{-a^2 b(a-b)}}}$$

$$+\frac{5 b^{2} \arctan\left(\frac{\tanh\left(\frac{d x}{2}+\frac{c}{2}\right) a}{\sqrt{-a^{2}+2 a b+2 \sqrt{-a^{2} b (a-b)}}}\right)}{2 d (a-b)^{3} \sqrt{-a^{2}+2 a b+2 \sqrt{-a^{2} b (a-b)}}}-\frac{5 b^{2} a^{2} \operatorname{arctanh}\left(\frac{\tanh\left(\frac{d x}{2}+\frac{c}{2}\right) a}{\sqrt{a^{2}-2 a b+2 \sqrt{-a^{2} b (a-b)}}}\right)}{2 d (a-b)^{3} \sqrt{-a^{2} b (a-b)} \sqrt{a^{2}-2 a b+2 \sqrt{-a^{2} b (a-b)}}}$$

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

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

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

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

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

Problem 91: Result more than twice size of optimal antiderivative.

$$\int \frac{\cosh(d x+c)^{6}}{\left(a+b \sinh(d x+c)^{2}\right)^{3}}\, dx$$

Optimal(type 3, 146 leaves, 6 steps):

$$\frac{x}{b^{3}}-\frac{\left(8 a^{2}+4 a b+3 b^{2}\right) \operatorname{arctanh}\left(\frac{\sqrt{a-b}\, \tanh(d x+c)}{\sqrt{a}}\right) \sqrt{a-b}}{8 a^{5/2} b^{3} d}-\frac{(a-b) \tanh(d x+c)}{4 a b d \left(a-(a-b) \tanh(d x+c)^{2}\right)^{2}}-\frac{(a-b) (4 a+3 b) \tanh(d x+c)}{8 a^{2} b^{2} d \left(a-(a-b) \tanh(d x+c)^{2}\right)}$$

Result(type ?, 2365 leaves): Display of huge result suppressed!

Problem 92: Result more than twice size of optimal antiderivative.

$$\int \frac{\cosh(dx+c)^2}{\left(a+b\sinh(dx+c)^2\right)^3}\, dx$$

Optimal(type 3, 129 leaves, 4 steps):

$$\frac{(4a-3b)\operatorname{arctanh}\left(\frac{\sqrt{a-b}\tanh(dx+c)}{\sqrt{a}}\right)}{8a^{5/2}(a-b)^{3/2}d}-\frac{b\tanh(dx+c)}{4a(a-b)d\left(a-(a-b)\tanh(dx+c)^2\right)^2}+\frac{(4a-3b)\tanh(dx+c)}{8a^2(a-b)d\left(a-(a-b)\tanh(dx+c)^2\right)}$$

Result(type ?, 2650 leaves): Display of huge result suppressed!

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

$$\int \frac{\operatorname{sech}(dx+c)}{\left(a+b\sinh(dx+c)^2\right)^3}\, dx$$

Optimal(type 3, 145 leaves, 6 steps):

$$\frac{\arctan(\sinh(dx+c))}{(a-b)^3 d}-\frac{b\sinh(dx+c)}{4a(a-b)d\left(a+b\sinh(dx+c)^2\right)^2}-\frac{(7a-3b)b\sinh(dx+c)}{8a^2(a-b)^2d\left(a+b\sinh(dx+c)^2\right)}$$
$$-\frac{\left(15a^2-10ab+3b^2\right)\arctan\left(\frac{\sinh(dx+c)\sqrt{b}}{\sqrt{a}}\right)\sqrt{b}}{8a^{5/2}(a-b)^3d}$$

Result(type ?, 2395 leaves): Display of huge result suppressed!

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

$$\int \frac{\operatorname{sech}(dx+c)^3}{\left(a+b\sinh(dx+c)^2\right)^3}\, dx$$

Optimal(type 3, 199 leaves, 7 steps):

$$\frac{(a-7b)\arctan(\sinh(dx+c))}{2(a-b)^4d}+\frac{b^{3/2}\left(35a^2-14ab+3b^2\right)\arctan\left(\frac{\sinh(dx+c)\sqrt{b}}{\sqrt{a}}\right)}{8a^{5/2}(a-b)^4d}+\frac{b(2a+b)\sinh(dx+c)}{4a(a-b)^2d\left(a+b\sinh(dx+c)^2\right)^2}$$
$$+\frac{(-b+4a)b(a+3b)\sinh(dx+c)}{8a^2(a-b)^3d\left(a+b\sinh(dx+c)^2\right)}+\frac{\operatorname{sech}(dx+c)\tanh(dx+c)}{2(a-b)d\left(a+b\sinh(dx+c)^2\right)^2}$$

Result(type ?, 2584 leaves): Display of huge result suppressed!

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

$$\int \frac{\operatorname{sech}(dx+c)^4}{\left(a+b\sinh(dx+c)^2\right)^3}\, dx$$

Optimal(type 3, 187 leaves, 6 steps):

$$\frac{b^2 \left(48 a^2-16 a b+3 b^2\right) \operatorname{arctanh}\left(\frac{\sqrt{a-b}\, \tanh(d x+c)}{\sqrt{a}}\right)}{8 a^{5/2} (a-b)^{9/2} d}+\frac{(a-4 b) \tanh(d x+c)}{(a-b)^4 d}-\frac{\tanh(d x+c)^3}{3 (a-b)^3 d}+\frac{b^4 \tanh(d x+c)}{4 a (a-b)^4 d \left(a-(a-b) \tanh(d x+c)^2\right)^2}$$
$$-\frac{(16 a-3 b) b^3 \tanh(d x+c)}{8 a^2 (a-b)^4 d \left(a-(a-b) \tanh(d x+c)^2\right)}$$

Result(type ?, 2123 leaves): Display of huge result suppressed!

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

$$\int \frac{\cosh(x)^2}{1-\sinh(x)^2}\, dx$$

Optimal(type 3, 15 leaves, 4 steps):

$$-x+\operatorname{arctanh}\left(\sqrt{2}\, \tanh(x)\right) \sqrt{2}$$

Result(type 3, 53 leaves):

$$\ln\left(\tanh\left(\frac{x}{2}\right)-1\right)+\sqrt{2}\, \operatorname{arctanh}\left(\frac{\left(2 \tanh\left(\frac{x}{2}\right)+2\right) \sqrt{2}}{4}\right)-\ln\left(\tanh\left(\frac{x}{2}\right)+1\right)+\sqrt{2}\, \operatorname{arctanh}\left(\frac{\left(2 \tanh\left(\frac{x}{2}\right)-2\right) \sqrt{2}}{4}\right)$$

Problem 97: Unable to integrate problem.

$$\int \operatorname{sech}(f x+e) \sqrt{a+b \sinh(f x+e)^2}\, dx$$

Optimal(type 3, 73 leaves, 6 steps):

$$\frac{\arctan\left(\frac{\sinh(f x+e) \sqrt{a-b}}{\sqrt{a+b \sinh(f x+e)^2}}\right) \sqrt{a-b}}{f}+\frac{\operatorname{arctanh}\left(\frac{\sinh(f x+e) \sqrt{b}}{\sqrt{a+b \sinh(f x+e)^2}}\right) \sqrt{b}}{f}$$

Result(type 9, 50 leaves):

$$\frac{\mathit{int/indef0}\left(-\frac{-b \sinh(f x+e)^2-a}{\cosh(f x+e)^2 \sqrt{a+b \sinh(f x+e)^2}}, \sinh(f x+e)\right)}{f}$$

Problem 99: Unable to integrate problem.

$$\int \operatorname{sech}(f x+e) \left(a+b \sinh(f x+e)^2\right)^{3/2} dx$$

Optimal(type 3, 107 leaves, 7 steps):

$$\frac{(a-b)^{3/2}\arctan\left(\frac{\sinh(fx+e)\sqrt{a-b}}{\sqrt{a+b\sinh(fx+e)^2}}\right)}{f}+\frac{(3a-2b)\,\operatorname{arctanh}\left(\frac{\sinh(fx+e)\sqrt{b}}{\sqrt{a+b\sinh(fx+e)^2}}\right)\sqrt{b}}{2f}+\frac{b\sinh(fx+e)\sqrt{a+b\sinh(fx+e)^2}}{2f}$$

Result(type 9, 62 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{b^2\sinh(fx+e)^4+2ab\sinh(fx+e)^2+a^2}{\cosh(fx+e)^2\sqrt{a+b\sinh(fx+e)^2}},\sinh(fx+e)\right)}{f}$$

Problem 101: Unable to integrate problem.

$$\int\frac{\operatorname{sech}(fx+e)}{\sqrt{a+b\sinh(fx+e)^2}}\,dx$$

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

$$\frac{\arctan\left(\frac{\sinh(fx+e)\sqrt{a-b}}{\sqrt{a+b\sinh(fx+e)^2}}\right)}{f\sqrt{a-b}}$$

Result(type 9, 34 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{1}{\cosh(fx+e)^2\sqrt{a+b\sinh(fx+e)^2}},\sinh(fx+e)\right)}{f}$$

Problem 103: Unable to integrate problem.

$$\int\frac{\cosh(fx+e)^3}{\left(a+b\sinh(fx+e)^2\right)^{3/2}}\,dx$$

Optimal(type 3, 69 leaves, 4 steps):

$$\frac{\operatorname{arctanh}\left(\frac{\sinh(fx+e)\sqrt{b}}{\sqrt{a+b\sinh(fx+e)^2}}\right)}{b^{3/2}f}-\frac{(a-b)\sinh(fx+e)}{abf\sqrt{a+b\sinh(fx+e)^2}}$$

Result(type 9, 34 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{\cosh(fx+e)^2}{\left(a+b\sinh(fx+e)^2\right)^{3/2}},\sinh(fx+e)\right)}{f}$$

Problem 107: Unable to integrate problem.

$$\int \frac{\cosh(fx+e)^3}{\left(a+b\sinh(fx+e)^2\right)^{5/2}}\,dx$$

Optimal(type 3, 65 leaves, 3 steps):

$$\frac{\cosh(fx+e)^2\sinh(fx+e)}{3af\left(a+b\sinh(fx+e)^2\right)^{3/2}}+\frac{2\sinh(fx+e)}{3a^2f\sqrt{a+b\sinh(fx+e)^2}}$$

Result(type 9, 64 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{\cosh(fx+e)^2}{\left(b^2\sinh(fx+e)^4+2ab\sinh(fx+e)^2+a^2\right)\sqrt{a+b\sinh(fx+e)^2}},\sinh(fx+e)\right)}{f}$$

Problem 108: Unable to integrate problem.

$$\int \cosh(fx+e)\left(a+b\sinh(fx+e)^2\right)^p\,dx$$

Optimal(type 5, 65 leaves, 3 steps):

$$\frac{\mathrm{hypergeom}\left(\left[\frac{1}{2},-p\right],\left[\frac{3}{2}\right],-\frac{b\sinh(fx+e)^2}{a}\right)\sinh(fx+e)\left(a+b\sinh(fx+e)^2\right)^p}{f\left(1+\frac{b\sinh(fx+e)^2}{a}\right)^p}$$

Result(type 8, 23 leaves):

$$\int \cosh(fx+e)\left(a+b\sinh(fx+e)^2\right)^p\,dx$$

Problem 109: Unable to integrate problem.

$$\int \cosh(fx+e)^2\left(a+b\sinh(fx+e)^2\right)^p\,dx$$

Optimal(type 6, 84 leaves, 3 steps):

$$\frac{\mathit{AppellF1}\left(\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},-\sinh(fx+e)^2,-\frac{b\sinh(fx+e)^2}{a}\right)\left(a+b\sinh(fx+e)^2\right)^p\sqrt{\cosh(fx+e)^2}\,\tanh(fx+e)}{f\left(1+\frac{b\sinh(fx+e)^2}{a}\right)^p}$$

Result(type 8, 25 leaves):

$$\int \cosh(fx+e)^2\left(a+b\sinh(fx+e)^2\right)^p\,dx$$

Problem 110: Unable to integrate problem.

$$\int \frac{\cosh(dx+c)^5}{\left(a+b\sqrt{\sinh(dx+c)}\right)^2}\, dx$$

Optimal(type 3, 248 leaves, 4 steps):

$$\frac{2\left(a^4+b^4\right)\left(9a^4+b^4\right)\ln\left(a+b\sqrt{\sinh(dx+c)}\right)}{b^{10}d}+\frac{a^2\left(7a^4+6b^4\right)\sinh(dx+c)}{b^8 d}-\frac{4a\left(3a^4+2b^4\right)\sinh(dx+c)^{3/2}}{3b^7 d}+\frac{\left(5a^4+2b^4\right)\sinh(dx+c)^2}{2b^6 d}$$
$$-\frac{8a^3\sinh(dx+c)^{5/2}}{5b^5 d}+\frac{a^2\sinh(dx+c)^3}{b^4 d}-\frac{4a\sinh(dx+c)^{7/2}}{7b^3 d}+\frac{\sinh(dx+c)^4}{4b^2 d}-\frac{16a^3\left(a^4+b^4\right)\sqrt{\sinh(dx+c)}}{b^9 d}$$
$$+\frac{2a\left(a^4+b^4\right)^2}{b^{10}d\left(a+b\sqrt{\sinh(dx+c)}\right)}$$

Result(type 9, 954 leaves):

$$-\frac{8\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a^4}{d\,b^4\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a^2+2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b^2-a^2\right)}-\frac{4\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)a^8}{d\,b^8\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a^2+2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b^2-a^2\right)}$$
$$+\frac{9\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a^2+2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b^2-a^2\right)a^8}{d\,b^{10}}+\frac{10\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2a^2+2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b^2-a^2\right)a^4}{d\,b^6}$$
$$-\frac{7a^6}{d\,b^8\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}-\frac{5a^4}{2d\,b^6\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}-\frac{6a^2}{d\,b^4\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}-\frac{a^2}{d\,b^4\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^3}$$
$$+\frac{5a^4}{2d\,b^6\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^2}+\frac{3a^2}{2d\,b^4\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^2}-\frac{9\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)a^8}{d\,b^{10}}-\frac{10\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)a^4}{d\,b^6}$$
$$-\frac{7a^6}{d\,b^8\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}+\frac{5a^4}{2d\,b^6\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{6a^2}{d\,b^4\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{a^2}{d\,b^4\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^3}$$
$$+\frac{5a^4}{2d\,b^6\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^2}-\frac{3a^2}{2d\,b^4\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^2}-\frac{9\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)a^8}{d\,b^{10}}-\frac{10\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)a^4}{d\,b^6}$$
$$+\frac{\mathit{int/indef0}\left(-\frac{2\cosh(dx+c)^4a\,b\sqrt{\sinh(dx+c)}}{b^4\sinh(dx+c)^2-2a^2b^2\sinh(dx+c)+a^4},\sinh(dx+c)\right)}{d}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{d\,b^2}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{d\,b^2}$$

$$-\frac{4\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{d\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a^2+2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b^2-a^2\right)}+\frac{9}{8\,d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^2}+\frac{1}{4\,d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^4}$$

$$+\frac{1}{2\,d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^3}+\frac{9}{8\,d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^2}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2 a^2+2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b^2-a^2\right)}{d\,b^2}$$

$$+\frac{1}{4\,d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^4}-\frac{1}{2\,d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^3}+\frac{7}{8\,d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{7}{8\,d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}$$

Problem 111: Result more than twice size of optimal antiderivative.

$$\int\frac{\cosh(dx+c)}{\left(a+b\sqrt{\sinh(dx+c)}\right)^2}\,dx$$

Optimal(type 3, 45 leaves, 4 steps):

$$\frac{2\ln\left(a+b\sqrt{\sinh(dx+c)}\right)}{b^2 d}+\frac{2a}{b^2 d\left(a+b\sqrt{\sinh(dx+c)}\right)}$$

Result(type 3, 143 leaves):

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

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

Problem 112: Unable to integrate problem.

$$\int\frac{\cosh(dx+c)^5}{\left(a+b\sinh(dx+c)^n\right)^2}\,dx$$

Optimal(type 5, 132 leaves, 6 steps):

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

$$+\frac{\mathrm{hypergeom}\left(\left[2,\frac{5}{n}\right],\left[\frac{5+n}{n}\right],-\frac{b\sinh(dx+c)^n}{a}\right)\sinh(dx+c)^5}{5a^2 d}$$

Result(type 8, 723 leaves):

$$\Bigg(\Big(\big((e^{dx+c})^8+4\,(e^{dx+c})^6+6\,(e^{dx+c})^4+4\,(e^{dx+c})^2+1\big)\,(e^{dx+c}-1)\,(1+e^{dx+c})\Big)\Bigg/\Bigg(32\,(e^{dx+c})^5\,n\,a\,d\,\Bigg(a$$

$$+b\,e^{n\left(-\ln(2)-\ln(e^{dx+c})+\ln(e^{dx+c}-1)+\ln(1+e^{dx+c})\right.}$$

$$-\frac{I\pi\,\mathrm{csgn}(I\,(e^{dx+c}-1)\,(1+e^{dx+c}))\,(-\mathrm{csgn}(I\,(e^{dx+c}-1)\,(1+e^{dx+c}))+\mathrm{csgn}(I\,(e^{dx+c}-1)))\,(-\mathrm{csgn}(I\,(e^{dx+c}-1)\,(1+e^{dx+c}))+\mathrm{csgn}(I\,(1+e^{dx+c})))}{2}$$

$$\left.-\frac{I\pi\,\mathrm{csgn}\left(\frac{I\,(e^{dx+c}-1)\,(1+e^{dx+c})}{e^{dx+c}}\right)\left(-\mathrm{csgn}\left(\frac{I\,(e^{dx+c}-1)\,(1+e^{dx+c})}{e^{dx+c}}\right)+\mathrm{csgn}\left(\frac{I}{e^{dx+c}}\right)\right)\left(-\mathrm{csgn}\left(\frac{I\,(e^{dx+c}-1)\,(1+e^{dx+c})}{e^{dx+c}}\right)+\mathrm{csgn}(I\,(e^{dx+c}-1)\,(1+e^{dx+c}))\right)}{2}\right)\Bigg)\Bigg)$$

$$+\int\Big(n\,(e^{dx+c})^{10}-5\,(e^{dx+c})^{10}+5\,n\,(e^{dx+c})^8-9\,(e^{dx+c})^8+10\,n\,(e^{dx+c})^6-2\,(e^{dx+c})^6+10\,n\,(e^{dx+c})^4-2\,(e^{dx+c})^4+5\,n\,(e^{dx+c})^2$$

$$-9\,(e^{dx+c})^2+n-5\Big)\Bigg/\Bigg(32\,(e^{dx+c})^5\,n\,a\,\Bigg(a$$

$$+b\,e^{n\left(-\ln(2)-\ln(e^{dx+c})+\ln(e^{dx+c}-1)+\ln(1+e^{dx+c})\right.}$$

$$-\frac{I\pi\,\mathrm{csgn}(I\,(e^{dx+c}-1)\,(1+e^{dx+c}))\,(-\mathrm{csgn}(I\,(e^{dx+c}-1)\,(1+e^{dx+c}))+\mathrm{csgn}(I\,(e^{dx+c}-1)))\,(-\mathrm{csgn}(I\,(e^{dx+c}-1)\,(1+e^{dx+c}))+\mathrm{csgn}(I\,(1+e^{dx+c})))}{2}$$

$$\left.-\frac{I\pi\,\mathrm{csgn}\left(\frac{I\,(e^{dx+c}-1)\,(1+e^{dx+c})}{e^{dx+c}}\right)\left(-\mathrm{csgn}\left(\frac{I\,(e^{dx+c}-1)\,(1+e^{dx+c})}{e^{dx+c}}\right)+\mathrm{csgn}\left(\frac{I}{e^{dx+c}}\right)\right)\left(-\mathrm{csgn}\left(\frac{I\,(e^{dx+c}-1)\,(1+e^{dx+c})}{e^{dx+c}}\right)+\mathrm{csgn}(I\,(e^{dx+c}-1)\,(1+e^{dx+c}))\right)}{2}\right)\Bigg)\Bigg)\,dx$$

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Problem 113: Result more than twice size of optimal antiderivative.
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$$\int \frac{\coth(x)}{1-\sinh(x)^2}\,dx$$

Optimal(type 3, 15 leaves, 4 steps):

$$\ln(\sinh(x)) - \frac{\ln(1-\sinh(x)^2)}{2}$$

Result(type 3, 40 leaves):

$$\ln\left(\tanh\left(\frac{x}{2}\right)\right) - \frac{\ln\left(\tanh\left(\frac{x}{2}\right)^2 + 2\tanh\left(\frac{x}{2}\right) - 1\right)}{2} - \frac{\ln\left(\tanh\left(\frac{x}{2}\right)^2 - 2\tanh\left(\frac{x}{2}\right) - 1\right)}{2}$$

Problem 114: Unable to integrate problem.

$$\int \coth(fx+e)^3 \sqrt{a + a\sinh(fx+e)^2}\, dx$$

Optimal(type 3, 71 leaves, 7 steps):

$$-\frac{(a\cosh(fx+e)^2)^{3/2}\operatorname{csch}(fx+e)^2}{2af} - \frac{3\operatorname{arctanh}\left(\frac{\sqrt{a\cosh(fx+e)^2}}{\sqrt{a}}\right)\sqrt{a}}{2f} + \frac{3\sqrt{a\cosh(fx+e)^2}}{2f}$$

Result(type 9, 53 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{a\cosh(fx+e)^4}{\sinh(fx+e)\,(\cosh(fx+e)^2-1)\sqrt{a\cosh(fx+e)^2}}, \sinh(fx+e)\right)}{f}$$

Problem 118: Unable to integrate problem.

$$\int \frac{\tanh(fx+e)^5}{\sqrt{a + a\sinh(fx+e)^2}}\, dx$$

Optimal(type 3, 56 leaves, 5 steps):

$$-\frac{a^2}{5f(a\cosh(fx+e)^2)^{5/2}} + \frac{2a}{3f(a\cosh(fx+e)^2)^{3/2}} - \frac{1}{f\sqrt{a\cosh(fx+e)^2}}$$

Result(type 9, 40 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{\sinh(fx+e)^5}{\cosh(fx+e)^6\sqrt{a\cosh(fx+e)^2}}, \sinh(fx+e)\right)}{f}$$

Problem 121: Unable to integrate problem.

$$\int \frac{\tanh(fx+e)^5}{(a + a\sinh(fx+e)^2)^{3/2}}\, dx$$

Optimal(type 3, 56 leaves, 5 steps):

$$-\frac{a^2}{7 f \left(a \cosh(f x+e)^2\right)^{7/2}}+\frac{2 a}{5 f \left(a \cosh(f x+e)^2\right)^{5/2}}-\frac{1}{3 f \left(a \cosh(f x+e)^2\right)^{3/2}}$$

Result(type 9, 43 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{\sinh(f x+e)^5}{\cosh(f x+e)^8 a \sqrt{a \cosh(f x+e)^2}}, \sinh(f x+e)\right)}{f}$$

Problem 124: Unable to integrate problem.

$$\int \coth(f x+e) \sqrt{a+b \sinh(f x+e)^2}\, dx$$

Optimal(type 3, 46 leaves, 4 steps):

$$-\frac{\operatorname{arctanh}\left(\frac{\sqrt{a+b \sinh(f x+e)^2}}{\sqrt{a}}\right) \sqrt{a}}{f}+\frac{\sqrt{a+b \sinh(f x+e)^2}}{f}$$

Result(type 9, 45 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{b \sinh(f x+e)+\frac{a}{\sinh(f x+e)}}{\sqrt{a+b \sinh(f x+e)^2}}, \sinh(f x+e)\right)}{f}$$

Problem 125: Unable to integrate problem.

$$\int \coth(f x+e)^5 \sqrt{a+b \sinh(f x+e)^2}\, dx$$

Optimal(type 3, 147 leaves, 6 steps):

$$-\frac{(8 a^2+8 a b-b^2) \operatorname{arctanh}\left(\frac{\sqrt{a+b \sinh(f x+e)^2}}{\sqrt{a}}\right)}{8 a^{3/2} f}-\frac{(8 a-b) \operatorname{csch}(f x+e)^2 \left(a+b \sinh(f x+e)^2\right)^{3/2}}{8 a^2 f}-\frac{\operatorname{csch}(f x+e)^4 \left(a+b \sinh(f x+e)^2\right)^{3/2}}{4 a f}$$
$$+\frac{(8 a^2+8 a b-b^2) \sqrt{a+b \sinh(f x+e)^2}}{8 a^2 f}$$

Result(type 9, 79 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{\cosh(f x+e)^4 \left(a-b+b \cosh(f x+e)^2\right)}{\sinh(f x+e) \left(1+\cosh(f x+e)^4-2 \cosh(f x+e)^2\right) \sqrt{a+b \sinh(f x+e)^2}}, \sinh(f x+e)\right)}{f}$$

Problem 128: Unable to integrate problem.

$$\int \left(a+b\sinh(fx+e)^2\right)^{3/2}\tanh(fx+e)^5\,dx$$

Optimal(type 3, 208 leaves, 7 steps):

$$\frac{\left(8a^2-40ab+35b^2\right)\left(a+b\sinh(fx+e)^2\right)^{3/2}}{24\,(a-b)^2 f}+\frac{(8a-9b)\operatorname{sech}(fx+e)^2\left(a+b\sinh(fx+e)^2\right)^{5/2}}{8\,(a-b)^2 f}-\frac{\operatorname{sech}(fx+e)^4\left(a+b\sinh(fx+e)^2\right)^{5/2}}{4\,(a-b)\,f}$$
$$-\frac{\left(8a^2-40ab+35b^2\right)\operatorname{arctanh}\left(\frac{\sqrt{a+b\sinh(fx+e)^2}}{\sqrt{a-b}}\right)}{8f\sqrt{a-b}}+\frac{\left(8a^2-40ab+35b^2\right)\sqrt{a+b\sinh(fx+e)^2}}{8\,(a-b)\,f}$$

Result(type 9, 70 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{\sinh(fx+e)^5\left(b^2\sinh(fx+e)^4+2ab\sinh(fx+e)^2+a^2\right)}{\cosh(fx+e)^6\sqrt{a+b\sinh(fx+e)^2}},\sinh(fx+e)\right)}{f}$$

Problem 129: Unable to integrate problem.

$$\int \coth(fx+e)\left(a+b\sinh(fx+e)^2\right)^{3/2}dx$$

Optimal(type 3, 66 leaves, 5 steps):

$$-\frac{a^{3/2}\operatorname{arctanh}\left(\frac{\sqrt{a+b\sinh(fx+e)^2}}{\sqrt{a}}\right)}{f}+\frac{\left(a+b\sinh(fx+e)^2\right)^{3/2}}{3f}+\frac{a\sqrt{a+b\sinh(fx+e)^2}}{f}$$

Result(type 9, 61 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{b^2\sinh(fx+e)^3+2ab\sinh(fx+e)+\frac{a^2}{\sinh(fx+e)}}{\sqrt{a+b\sinh(fx+e)^2}},\sinh(fx+e)\right)}{f}$$

Problem 130: Unable to integrate problem.

$$\int \coth(fx+e)^3\left(a+b\sinh(fx+e)^2\right)^{3/2}dx$$

Optimal(type 3, 120 leaves, 6 steps):

$$\frac{(2a+3b)\left(a+b\sinh(fx+e)^2\right)^{3/2}}{6af}-\frac{\operatorname{csch}(fx+e)^2\left(a+b\sinh(fx+e)^2\right)^{5/2}}{2af}-\frac{(2a+3b)\operatorname{arctanh}\left(\frac{\sqrt{a+b\sinh(fx+e)^2}}{\sqrt{a}}\right)\sqrt{a}}{2f}$$

$$+\frac{(2a+3b)\sqrt{a+b\sinh(fx+e)^2}}{2f}$$

Result(type 9, 83 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{b^2\sinh(fx+e)^3+\left(2ab+b^2\right)\sinh(fx+e)+\frac{a^2+2ab}{\sinh(fx+e)}+\frac{a^2}{\sinh(fx+e)^3}}{\sqrt{a+b\sinh(fx+e)^2}},\sinh(fx+e)\right)}{f}$$

Problem 133: Unable to integrate problem.

$$\int\frac{\coth(fx+e)^5}{\sqrt{a+b\sinh(fx+e)^2}}\,dx$$

Optimal(type 3, 110 leaves, 5 steps):

$$-\frac{\left(8a^2-8ab+3b^2\right)\operatorname{arctanh}\left(\frac{\sqrt{a+b\sinh(fx+e)^2}}{\sqrt{a}}\right)}{8a^{5/2}f}-\frac{(8a-3b)\operatorname{csch}(fx+e)^2\sqrt{a+b\sinh(fx+e)^2}}{8a^2f}-\frac{\operatorname{csch}(fx+e)^4\sqrt{a+b\sinh(fx+e)^2}}{4af}$$

Result(type 9, 53 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{\frac{1}{\sinh(fx+e)}+\frac{2}{\sinh(fx+e)^3}+\frac{1}{\sinh(fx+e)^5}}{\sqrt{a+b\sinh(fx+e)^2}},\sinh(fx+e)\right)}{f}$$

Problem 134: Unable to integrate problem.

$$\int\frac{\tanh(fx+e)^3}{\left(a+b\sinh(fx+e)^2\right)^{3/2}}\,dx$$

Optimal(type 3, 106 leaves, 5 steps):

$$-\frac{(2a+b)\operatorname{arctanh}\left(\frac{\sqrt{a+b\sinh(fx+e)^2}}{\sqrt{a-b}}\right)}{2(a-b)^{5/2}f}+\frac{2a+b}{2(a-b)^2f\sqrt{a+b\sinh(fx+e)^2}}+\frac{\operatorname{sech}(fx+e)^2}{2(a-b)f\sqrt{a+b\sinh(fx+e)^2}}$$

Result(type 9, 102 leaves):

$$\frac{\mathit{int/indef0}\left(-\frac{\sinh(fx+e)^3\sqrt{a+b\sinh(fx+e)^2}\cosh(fx+e)^2}{-b^2\cosh(fx+e)^{10}+\left(-2ab+2b^2\right)\cosh(fx+e)^8+\left(-a^2+2ab-b^2\right)\cosh(fx+e)^6},\sinh(fx+e)\right)}{f}$$

Problem 135: Unable to integrate problem.

$$\int \frac{\coth(fx+e)}{\left(a+b\sinh(fx+e)^2\right)^{3/2}}\,dx$$

Optimal(type 3, 49 leaves, 4 steps):

$$-\frac{\operatorname{arctanh}\left(\frac{\sqrt{a+b\sinh(fx+e)^2}}{\sqrt{a}}\right)}{a^{3/2}f}+\frac{1}{af\sqrt{a+b\sinh(fx+e)^2}}$$

Result(type 9, 34 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{1}{\sinh(fx+e)\left(a+b\sinh(fx+e)^2\right)^{3/2}},\sinh(fx+e)\right)}{f}$$

Problem 136: Unable to integrate problem.

$$\int \frac{\coth(fx+e)^3}{\left(a+b\sinh(fx+e)^2\right)^{3/2}}\,dx$$

Optimal(type 3, 94 leaves, 5 steps):

$$-\frac{(2a-3b)\operatorname{arctanh}\left(\frac{\sqrt{a+b\sinh(fx+e)^2}}{\sqrt{a}}\right)}{2a^{5/2}f}+\frac{2a-3b}{2a^2f\sqrt{a+b\sinh(fx+e)^2}}-\frac{\operatorname{csch}(fx+e)^2}{2af\sqrt{a+b\sinh(fx+e)^2}}$$

Result(type 9, 42 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{\cosh(fx+e)^2}{\sinh(fx+e)^3\left(a+b\sinh(fx+e)^2\right)^{3/2}},\sinh(fx+e)\right)}{f}$$

Problem 137: Unable to integrate problem.

$$\int \frac{\coth(fx+e)^3}{\left(a+b\sinh(fx+e)^2\right)^{5/2}}\,dx$$

Optimal(type 3, 123 leaves, 6 steps):

$$-\frac{(2a-5b)\operatorname{arctanh}\left(\frac{\sqrt{a+b\sinh(fx+e)^2}}{\sqrt{a}}\right)}{2a^{7/2}f}+\frac{2a-5b}{6a^2f\left(a+b\sinh(fx+e)^2\right)^{3/2}}-\frac{\operatorname{csch}(fx+e)^2}{2af\left(a+b\sinh(fx+e)^2\right)^{3/2}}+\frac{2a-5b}{2a^3f\sqrt{a+b\sinh(fx+e)^2}}$$

Result(type 9, 72 leaves):

$$\frac{\mathit{int/indef0}\left(\frac{\cosh(fx+e)^2}{\left(b^2\sinh(fx+e)^4+2\,a\,b\sinh(fx+e)^2+a^2\right)\sinh(fx+e)^3\sqrt{a+b\sinh(fx+e)^2}},\sinh(fx+e)\right)}{f}$$

Problem 139: Unable to integrate problem.

$$\int\coth(d\,x+c)^3\left(a+b\sinh(d\,x+c)^2\right)^p\,\mathrm{d}x$$

Optimal(type 5, 92 leaves, 3 steps):

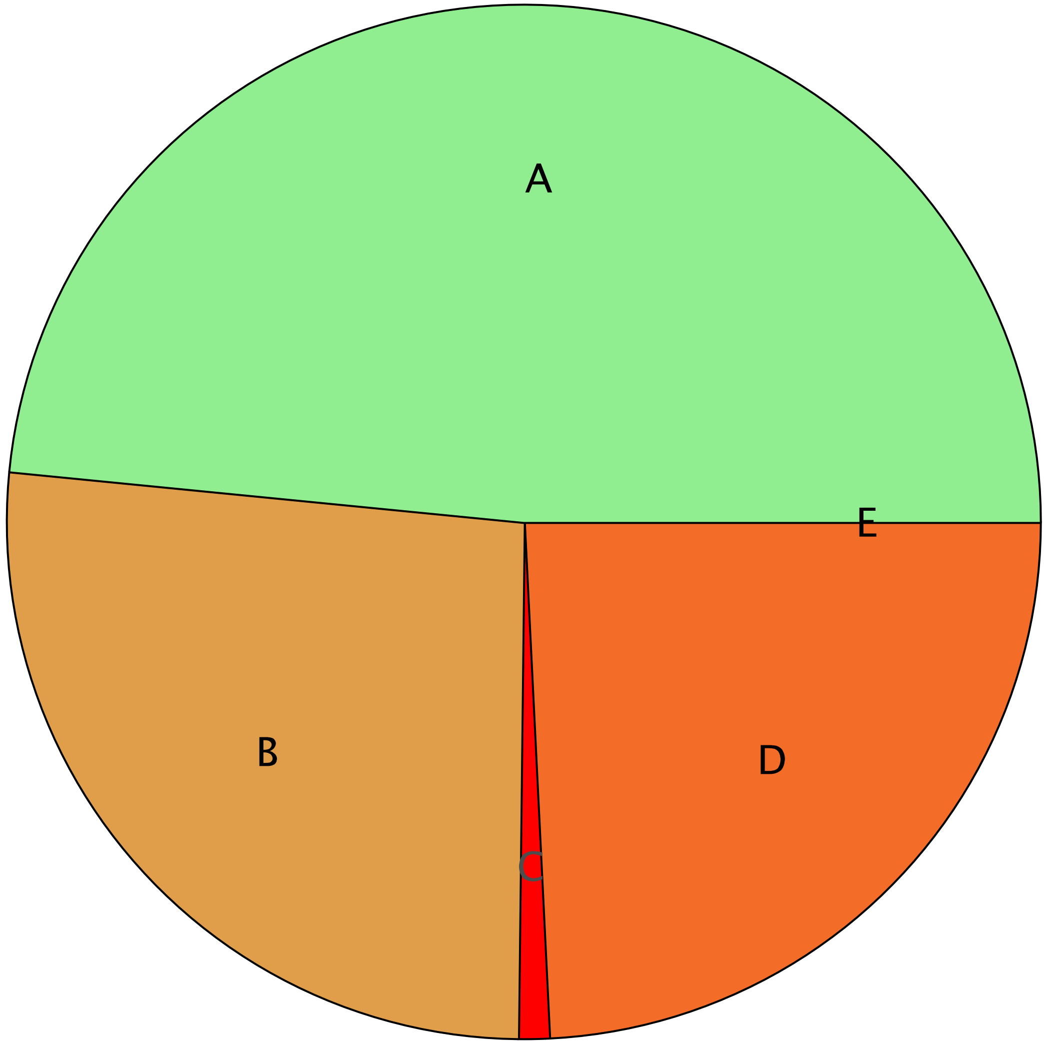
$$-\frac{\operatorname{csch}(d\,x+c)^2\left(a+b\sinh(d\,x+c)^2\right)^{1+p}}{2\,a\,d}-\frac{(p\,b+a)\,\mathrm{hypergeom}\left([1,1+p],[2+p],1+\frac{b\sinh(d\,x+c)^2}{a}\right)\left(a+b\sinh(d\,x+c)^2\right)^{1+p}}{2\,a^2\,d\,(1+p)}$$

Result(type 8, 25 leaves):

$$\int\coth(d\,x+c)^3\left(a+b\sinh(d\,x+c)^2\right)^p\,\mathrm{d}x$$

Summary of Integration Test Results

417 integration problems



A - 202 optimal antiderivatives
B - 110 more than twice size of optimal antiderivatives
C - 4 unnecessarily complex antiderivatives
D - 101 unable to integrate problems
E - 0 integration timeouts