Mathematica 11.3 Integration Test Results

Test results for the 1071 problems in "1.1.2.2 (c x)^m (a+b x^2)^p.m"

Problem 38: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b x^2\right)^3}{x^9} \, dx$$

Optimal (type 1, 19 leaves, 1 step):

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

Result (type 1, 43 leaves):

$$-\frac{a^3}{8 x^8}-\frac{a^2 b}{2 x^6}-\frac{3 a b^2}{4 x^4}-\frac{b^3}{2 x^2}$$

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

$$\int \frac{\left(a+b x^2\right)^5}{x^{13}} \, dx$$

Optimal (type 1, 19 leaves, 1 step):

$$-\frac{\left(a+b x^2\right)^6}{12 a x^{12}}$$

Result (type 1, 69 leaves):

$$-\frac{a^5}{12 x^{12}}-\frac{a^4 b}{2 x^{10}}-\frac{5 a^3 b^2}{4 x^8}-\frac{5 a^2 b^3}{3 x^6}-\frac{5 a b^4}{4 x^4}-\frac{b^5}{2 x^2}$$

Problem 90: Result more than twice size of optimal antiderivative.

$$\int x^3 \left(a+b x^2\right)^8 \, dx$$

Optimal (type 1, 34 leaves, 3 steps):

$$-\frac{a \left(a+b x^2\right)^9}{18 b^2}+\frac{\left(a+b x^2\right)^{10}}{20 b^2}$$

Result (type 1, 106 leaves):

$$\frac{a^8 x^4}{4}+\frac{4}{3} a^7 b x^6+\frac{7}{2} a^6 b^2 x^8+\frac{28}{5} a^5 b^3 x^{10}+\frac{35}{6} a^4 b^4 x^{12}+4 a^3 b^5 x^{14}+\frac{7}{4} a^2 b^6 x^{16}+\frac{4}{9} a b^7 x^{18}+\frac{b^8 x^{20}}{20}$$

Problem 101: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b x^2\right)^8}{x^{19}} \, dx$$

Optimal (type 1, 19 leaves, 1 step):

$$-\frac{\left(a+b x^2\right)^9}{18 a x^{18}}$$

Result (type 1, 100 leaves):

$$-\frac{a^8}{18 x^{18}}-\frac{a^7 b}{2 x^{16}}-\frac{2 a^6 b^2}{x^{14}}-\frac{14 a^5 b^3}{3 x^{12}}-\frac{7 a^4 b^4}{x^{10}}-\frac{7 a^3 b^5}{x^8}-\frac{14 a^2 b^6}{3 x^6}-\frac{2 a b^7}{x^4}-\frac{b^8}{2 x^2}$$

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

$$\int \frac{\left(a+b x^2\right)^8}{x^{21}} \, dx$$

Optimal (type 1, 40 leaves, 3 steps):

$$-\frac{\left(a+b x^2\right)^9}{20 a x^{20}}+\frac{b \left(a+b x^2\right)^9}{180 a^2 x^{18}}$$

Result (type 1, 106 leaves):

$$-\frac{a^8}{20 x^{20}}-\frac{4 a^7 b}{9 x^{18}}-\frac{7 a^6 b^2}{4 x^{16}}-\frac{4 a^5 b^3}{x^{14}}-\frac{35 a^4 b^4}{6 x^{12}}-\frac{28 a^3 b^5}{5 x^{10}}-\frac{7 a^2 b^6}{2 x^8}-\frac{4 a b^7}{3 x^6}-\frac{b^8}{4 x^4}$$

Problem 196: Result more than twice size of optimal antiderivative.

$$\int \frac{x^{17}}{\left(a+b x^2\right)^{10}} \, dx$$

Optimal (type 1, 19 leaves, 1 step):

$$\frac{x^{18}}{18 a \left(a+b x^2\right)^9}$$

Result (type 1, 101 leaves):

$$-\frac{1}{18 b^9 \left(a+b x^2\right)^9}\left(a^8+9 a^7 b x^2+36 a^6 b^2 x^4+84 a^5 b^3 x^6+126 a^4 b^4 x^8+126 a^3 b^5 x^{10}+84 a^2 b^6 x^{12}+36 a b^7 x^{14}+9 b^8 x^{16}\right)$$

Problem 197: Result more than twice size of optimal antiderivative.

$$\int \frac{x^{15}}{\left(a+b x^2\right)^{10}} \, dx$$

Optimal (type 1, 39 leaves, 3 steps):

$$\frac{x^{16}}{18\, a\, \left(a+b\, x^2\right)^9}+\frac{x^{16}}{144\, a^2\, \left(a+b\, x^2\right)^8}$$

Result (type 1, 90 leaves):

$$-\frac{1}{144\, b^8\, \left(a+b\, x^2\right)^9}\left(a^7+9\, a^6\, b\, x^2+36\, a^5\, b^2\, x^4+84\, a^4\, b^3\, x^6+126\, a^3\, b^4\, x^8+126\, a^2\, b^5\, x^{10}+84\, a\, b^6\, x^{12}+36\, b^7\, x^{14}\right)$$

Problem 337: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 15 leaves, 4 steps):

$$-\text{ArcTan}\left[\sqrt{x}\right]+\text{ArcTanh}\left[\sqrt{x}\right]$$

Result (type 3, 35 leaves):

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

Problem 559: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{-9+4\, x^2}}\, dx$$

Optimal (type 3, 19 leaves, 2 steps):

$$\frac{1}{2}\,\text{ArcTanh}\left[\frac{2\, x}{\sqrt{-9+4\, x^2}}\right]$$

Result (type 3, 43 leaves):

$$-\frac{1}{4}\,\text{Log}\left[1-\frac{2\, x}{\sqrt{-9+4\, x^2}}\right]+\frac{1}{4}\,\text{Log}\left[1+\frac{2\, x}{\sqrt{-9+4\, x^2}}\right]$$

Problem 589: Result unnecessarily involves imaginary or complex numbers.

$$\int (c\, x)^{7/2}\, \sqrt{a+b\, x^2}\, dx$$

Optimal (type 4, 184 leaves, 5 steps):

$$-\frac{20 a^2 c^3 \sqrt{c x} \sqrt{a+b x^2}}{231 b^2}+\frac{4 a c (c x)^{5/2} \sqrt{a+b x^2}}{77 b}+\frac{2 (c x)^{9/2} \sqrt{a+b x^2}}{11 c}+\left(10 a^{11/4} c^{7/2} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]\right)\Big/\left(231 b^{9/4} \sqrt{a+b x^2}\right)$$

Result (type 4, 155 leaves) :

$$\left(2 c^3 \sqrt{c x} \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}} \left(-10 a^3-4 a^2 b x^2+27 a b^2 x^4+21 b^3 x^6\right)+10 i a^3 \sqrt{1+\frac{a}{b x^2}} \sqrt{x} \text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(231 \sqrt{\frac{i \sqrt{a}}{\sqrt{b}}} b^2 \sqrt{a+b x^2}\right)$$

Problem 590: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 301 leaves, 6 steps) :

$$\frac{4 a c (c x)^{3/2} \sqrt{a+b x^2}}{45 b}+\frac{2 (c x)^{7/2} \sqrt{a+b x^2}}{9 c}-\frac{4 a^2 c^2 \sqrt{c x} \sqrt{a+b x^2}}{15 b^{3/2} \left(\sqrt{a}+\sqrt{b} x\right)}+\frac{1}{15 b^{7/4} \sqrt{a+b x^2}} 4 a^{9/4} c^{5/2} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}} \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]-\frac{1}{15 b^{7/4} \sqrt{a+b x^2}} 2 a^{9/4} c^{5/2} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]$$

Result (type 4, 191 leaves) :

$$\left(2 c^2 \sqrt{c x} \left(\sqrt{b}\, x \sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}} \left(2 a^2 + 7 a b x^2 + 5 b^2 x^4\right) - 6 a^{5/2} \sqrt{1 + \frac{b x^2}{a}}\, \text{EllipticE}\left[i\, \text{ArcSinh}\left[\sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}}\right], -1\right] + 6 a^{5/2} \sqrt{1 + \frac{b x^2}{a}}\, \text{EllipticF}\left[i\, \text{ArcSinh}\left[\sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}}\right], -1\right]\right)\right) \Big/ \left(45 b^{3/2} \sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}} \sqrt{a + b x^2}\right)$$

Problem 591: Result unnecessarily involves imaginary or complex numbers.

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

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

$$\frac{4 a c \sqrt{c x} \sqrt{a + b x^2}}{21 b} + \frac{2 (c x)^{5/2} \sqrt{a + b x^2}}{7 c} - \frac{1}{21 b^{5/4} \sqrt{a + b x^2}} 2 a^{7/4} c^{3/2} \left(\sqrt{a} + \sqrt{b}\, x\right) \sqrt{\frac{a + b x^2}{\left(\sqrt{a} + \sqrt{b}\, x\right)^2}}\, \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right], \frac{1}{2}\right]$$

Result (type 4, 142 leaves):

$$\left(2 c \sqrt{c x} \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}} \left(2 a^2 + 5 a b x^2 + 3 b^2 x^4\right) - 2 i a^2 \sqrt{1 + \frac{a}{b x^2}} \sqrt{x}\, \text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right], -1\right]\right)\right) \Big/ \left(21 \sqrt{\frac{i \sqrt{a}}{\sqrt{b}}}\, b \sqrt{a + b x^2}\right)$$

Problem 592: Result unnecessarily involves imaginary or complex numbers.

$$\int \sqrt{c x} \sqrt{a + b x^2}\, dx$$

Optimal (type 4, 269 leaves, 5 steps):

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

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

$$\frac{1}{5\,b^{3/4}\,\sqrt{a+b\,x^2}}2\,a^{5/4}\,\sqrt{c}\,\left(\sqrt{a}+\sqrt{b}\,x\right)\,\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{a^{1/4}\,\sqrt{c}}\right],\frac{1}{2}\right]$$

Result (type 4, 174 leaves) :

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

$$\left.\left.2\,a^{3/2}\,\sqrt{1+\frac{b\,x^2}{a}}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]\right)\right)\Big/\left(5\,\sqrt{b}\,\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\,\sqrt{a+b\,x^2}\right)$$

Problem 593: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 126 leaves, 3 steps) :

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

Result (type 4, 103 leaves) :

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

Problem 594: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 263 leaves, 5 steps) :

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

Result (type 4, 174 leaves):

$$\left(x\left(-2\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\left(a+b x^2\right)+4\sqrt{a}\sqrt{b}\,x\sqrt{1+\frac{b x^2}{a}}\ \text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]-4\sqrt{a}\sqrt{b}\,x\sqrt{1+\frac{b x^2}{a}}\ \text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]\right)\right)\Big/\left(\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\,(c x)^{3/2}\sqrt{a+b x^2}\right)$$

Problem 595: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 126 leaves, 3 steps):

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

Result (type 4, 106 leaves):

$$\frac{2\,x\left(-a-b x^2+\frac{2\,i\,b\sqrt{1+\frac{a}{b x^2}}\,x^{5/2}\ \text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]}{\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}}\right)}{3\,(c x)^{5/2}\sqrt{a+b x^2}}$$

Problem 596: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 303 leaves, 6 steps):

$$-\frac{2\sqrt{a+b x^2}}{5 c (c x)^{5/2}}-\frac{4 b \sqrt{a+b x^2}}{5 a c^3 \sqrt{c x}}+\frac{4 b^{3/2} \sqrt{c x} \sqrt{a+b x^2}}{5 a c^4 \left(\sqrt{a}+\sqrt{b} x\right)}-\frac{4 b^{5/4} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}}\ \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]}{5 a^{3/4} c^{7/2} \sqrt{a+b x^2}}+\frac{2 b^{5/4} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}}\ \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]}{5 a^{3/4} c^{7/2} \sqrt{a+b x^2}}$$

Result (type 4, 196 leaves):

$$\left(x \left(-2 \sqrt{\frac{i \sqrt{b} x}{\sqrt{a}}} \left(a^2+3 a b x^2+2 b^2 x^4\right)+4 \sqrt{a} b^{3/2} x^3 \sqrt{1+\frac{b x^2}{a}}\ \text{EllipticE}\left[i\, \text{ArcSinh}\left[\sqrt{\frac{i \sqrt{b} x}{\sqrt{a}}}\right],-1\right]-4 \sqrt{a} b^{3/2} x^3 \sqrt{1+\frac{b x^2}{a}}\ \text{EllipticF}\left[i\, \text{ArcSinh}\left[\sqrt{\frac{i \sqrt{b} x}{\sqrt{a}}}\right],-1\right]\right)\right)\Big/\left(5 a \sqrt{\frac{i \sqrt{b} x}{\sqrt{a}}} (c x)^{7/2} \sqrt{a+b x^2}\right)$$

Problem 597: Result unnecessarily involves imaginary or complex numbers.

$$\int (c x)^{7/2} \left(a+b x^2\right)^{3/2} dx$$

Optimal (type 4, 212 leaves, 6 steps):

$$-\frac{8 a^3 c^3 \sqrt{c x} \sqrt{a+b x^2}}{231 b^2}+\frac{8 a^2 c (c x)^{5/2} \sqrt{a+b x^2}}{385 b}+\frac{4 a (c x)^{9/2} \sqrt{a+b x^2}}{55 c}+\frac{2 (c x)^{9/2} \left(a+b x^2\right)^{3/2}}{15 c}+\left(4 a^{15/4} c^{7/2} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}}\ \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]\right)\Big/\left(231 b^{9/4} \sqrt{a+b x^2}\right)$$

Result (type 4, 166 leaves):

$$\left(2 c^3 \sqrt{c x} \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}} \left(-20 a^4 - 8 a^3 b x^2 + 131 a^2 b^2 x^4 + 196 a b^3 x^6 + 77 b^4 x^8\right) + 20 i a^4 \sqrt{1 + \frac{a}{b x^2}} \sqrt{x}\, \text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right], -1\right]\right)\right) \Big/ \left(1155 \sqrt{\frac{i \sqrt{a}}{\sqrt{b}}}\, b^2 \sqrt{a + b x^2}\right)$$

Problem 598: Result unnecessarily involves imaginary or complex numbers.

$$\int (c x)^{5/2} \left(a + b x^2\right)^{3/2} dx$$

Optimal (type 4, 329 leaves, 7 steps):

$$\frac{8 a^2 c (c x)^{3/2} \sqrt{a + b x^2}}{195 b} + \frac{4 a (c x)^{7/2} \sqrt{a + b x^2}}{39 c} - \frac{8 a^3 c^2 \sqrt{c x} \sqrt{a + b x^2}}{65 b^{3/2} \left(\sqrt{a} + \sqrt{b} x\right)} + \frac{2 (c x)^{7/2} \left(a + b x^2\right)^{3/2}}{13 c} + \frac{1}{65 b^{7/4} \sqrt{a + b x^2}} 8 a^{13/4} c^{5/2} \left(\sqrt{a} + \sqrt{b} x\right) \sqrt{\frac{a + b x^2}{\left(\sqrt{a} + \sqrt{b} x\right)^2}}\, \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right], \frac{1}{2}\right] - \frac{1}{65 b^{7/4} \sqrt{a + b x^2}} 4 a^{13/4} c^{5/2} \left(\sqrt{a} + \sqrt{b} x\right) \sqrt{\frac{a + b x^2}{\left(\sqrt{a} + \sqrt{b} x\right)^2}}\, \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right], \frac{1}{2}\right]$$

Result (type 4, 202 leaves):

$$\left(2 c^2 \sqrt{c x} \left(\sqrt{b}\, x \sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}} \left(4 a^3 + 29 a^2 b x^2 + 40 a b^2 x^4 + 15 b^3 x^6\right) - 12 a^{7/2} \sqrt{1 + \frac{b x^2}{a}}\, \text{EllipticE}\left[i\, \text{ArcSinh}\left[\sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}}\right], -1\right] + 12 a^{7/2} \sqrt{1 + \frac{b x^2}{a}}\, \text{EllipticF}\left[i\, \text{ArcSinh}\left[\sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}}\right], -1\right]\right)\right) \Big/ \left(195 b^{3/2} \sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}} \sqrt{a + b x^2}\right)$$

Problem 599: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 181 leaves, 5 steps):

$$\frac{8 a^2 c \sqrt{c x} \sqrt{a+b x^2}}{77 b}+\frac{12 a (c x)^{5/2} \sqrt{a+b x^2}}{77 c}+\frac{2 (c x)^{5/2} \left(a+b x^2\right)^{3/2}}{11 c}-\frac{1}{77 b^{5/4} \sqrt{a+b x^2}}$$

$$4 a^{11/4} c^{3/2} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right], \frac{1}{2}\right]$$

Result (type 4, 153 leaves):

$$\left(2 c \sqrt{c x} \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}} \left(4 a^3+17 a^2 b x^2+20 a b^2 x^4+7 b^3 x^6\right)-\right.\right.$$

$$\left.\left.4 i a^3 \sqrt{1+\frac{a}{b x^2}} \sqrt{x} \text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right], -1\right]\right)\right) \Big/ \left(77 \sqrt{\frac{i \sqrt{a}}{\sqrt{b}}} b \sqrt{a+b x^2}\right)$$

Problem 600: Result unnecessarily involves imaginary or complex numbers.

$$\int \sqrt{c x} \left(a+b x^2\right)^{3/2} dx$$

Optimal (type 4, 297 leaves, 6 steps):

$$\frac{4 a (c x)^{3/2} \sqrt{a+b x^2}}{15 c}+\frac{8 a^2 \sqrt{c x} \sqrt{a+b x^2}}{15 \sqrt{b} \left(\sqrt{a}+\sqrt{b} x\right)}+\frac{2 (c x)^{3/2} \left(a+b x^2\right)^{3/2}}{9 c}-\frac{1}{15 b^{3/4} \sqrt{a+b x^2}}$$

$$8 a^{9/4} \sqrt{c} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}} \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right], \frac{1}{2}\right]+$$

$$\frac{1}{15 b^{3/4} \sqrt{a+b x^2}} 4 a^{9/4} \sqrt{c} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right], \frac{1}{2}\right]$$

Result (type 4, 188 leaves):

$$\left(2 \sqrt{c x} \left(\sqrt{b} x \sqrt{\frac{i \sqrt{b} x}{\sqrt{a}}} \left(11 a^2+16 a b x^2+5 b^2 x^4\right)+\right.\right.$$

$$12 a^{5/2} \sqrt{1+\frac{b x^2}{a}} \text{EllipticE}\left[i \text{ArcSinh}\left[\sqrt{\frac{i \sqrt{b} x}{\sqrt{a}}}\right], -1\right]-$$

$$\left.\left.12 a^{5/2} \sqrt{1+\frac{b x^2}{a}} \text{EllipticF}\left[i \text{ArcSinh}\left[\sqrt{\frac{i \sqrt{b} x}{\sqrt{a}}}\right], -1\right]\right)\right) \Big/ \left(45 \sqrt{b} \sqrt{\frac{i \sqrt{b} x}{\sqrt{a}}} \sqrt{a+b x^2}\right)$$

Problem 601: Result unnecessarily involves imaginary or complex numbers.

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

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

$$\frac{4 a \sqrt{c x} \sqrt{a+b x^2}}{7 c}+\frac{2 \sqrt{c x} \left(a+b x^2\right)^{3/2}}{7 c}+\frac{4 a^{7/4} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]}{7 b^{1/4} \sqrt{c} \sqrt{a+b x^2}}$$

Result (type 4, 141 leaves):

$$\frac{\sqrt{x} \sqrt{a+b x^2} \left(\frac{6 a \sqrt{x}}{7}+\frac{2}{7} b x^{5/2}\right)}{\sqrt{c x}}+\frac{8 i a^2 \sqrt{1+\frac{a}{b x^2}} x^{3/2} \text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]}{7 \sqrt{\frac{i \sqrt{a}}{\sqrt{b}}} \sqrt{c x} \sqrt{a+b x^2}}$$

Problem 602: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 296 leaves, 6 steps):

$$\frac{12 b (c x)^{3/2} \sqrt{a+b x^2}}{5 c^3}+\frac{24 a \sqrt{b} \sqrt{c x} \sqrt{a+b x^2}}{5 c^2 \left(\sqrt{a}+\sqrt{b} x\right)}-\frac{2 \left(a+b x^2\right)^{3/2}}{c \sqrt{c x}}-\frac{1}{5 c^{3/2} \sqrt{a+b x^2}}$$
$$24 a^{5/4} b^{1/4} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}} \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]+$$
$$\frac{1}{5 c^{3/2} \sqrt{a+b x^2}} 12 a^{5/4} b^{1/4} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]$$

Result (type 4, 190 leaves):

$$\left(x\left(2\sqrt{\frac{i\sqrt{b}\ x}{\sqrt{a}}}\left(-5\,a^2-4\,a\,b\,x^2+b^2\,x^4\right)+24\,a^{3/2}\sqrt{b}\ x\sqrt{1+\frac{b\,x^2}{a}}\ \text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\sqrt{b}\ x}{\sqrt{a}}}\right],-1\right]-24\,a^{3/2}\sqrt{b}\ x\sqrt{1+\frac{b\,x^2}{a}}\ \text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\sqrt{b}\ x}{\sqrt{a}}}\right],-1\right]\right)\right)\Big/\left(5\sqrt{\frac{i\sqrt{b}\ x}{\sqrt{a}}}\ (c\,x)^{3/2}\sqrt{a+b\,x^2}\right)$$

Problem 603: Result unnecessarily involves imaginary or complex numbers.

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

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

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

Result (type 4, 130 leaves):

$$\left(x\left(-2\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}\left(a^2-b^2\,x^4\right)+8\,i\,a\,b\sqrt{1+\frac{a}{b\,x^2}}\ x^{5/2}\ \text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(3\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}\ (c\,x)^{5/2}\sqrt{a+b\,x^2}\right)$$

Problem 604: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(a+b\,x^2\right)^{3/2}}{(c\,x)^{7/2}}\,dx$$

Optimal (type 4, 297 leaves, 6 steps):

$$-\frac{12\,b\,\sqrt{a+b\,x^2}}{5\,c^3\,\sqrt{c\,x}}+\frac{24\,b^{3/2}\,\sqrt{c\,x}\,\sqrt{a+b\,x^2}}{5\,c^4\,\left(\sqrt{a}+\sqrt{b}\,x\right)}-\frac{2\,\left(a+b\,x^2\right)^{3/2}}{5\,c\,(c\,x)^{5/2}}-\frac{1}{5\,c^{7/2}\,\sqrt{a+b\,x^2}}$$

$$24\,a^{1/4}\,b^{5/4}\,\left(\sqrt{a}+\sqrt{b}\,x\right)\,\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\;\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{a^{1/4}\,\sqrt{c}}\right],\frac{1}{2}\right]+$$

$$\frac{1}{5\,c^{7/2}\,\sqrt{a+b\,x^2}}12\,a^{1/4}\,b^{5/4}\,\left(\sqrt{a}+\sqrt{b}\,x\right)\,\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\;\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{a^{1/4}\,\sqrt{c}}\right],\frac{1}{2}\right]$$

Result (type 4, 193 leaves):

$$\left(x\left(-2\,\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\,\left(a^2+8\,a\,b\,x^2+7\,b^2\,x^4\right)+\right.\right.$$

$$24\,\sqrt{a}\,b^{3/2}\,x^3\,\sqrt{1+\frac{b\,x^2}{a}}\;\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]-24\,\sqrt{a}\,b^{3/2}\,x^3$$

$$\left.\left.\sqrt{1+\frac{b\,x^2}{a}}\;\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]\right)\right)\Big/\left(5\,\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\,(c\,x)^{7/2}\,\sqrt{a+b\,x^2}\right)$$

Problem 605: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(a+b\,x^2\right)^{3/2}}{(c\,x)^{9/2}}\,dx$$

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

$$-\frac{4\,b\,\sqrt{a+b\,x^2}}{7\,c^3\,(c\,x)^{3/2}}-\frac{2\,\left(a+b\,x^2\right)^{3/2}}{7\,c\,(c\,x)^{7/2}}+$$

$$\frac{4\,b^{7/4}\,\left(\sqrt{a}+\sqrt{b}\,x\right)\,\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\;\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{a^{1/4}\,\sqrt{c}}\right],\frac{1}{2}\right]}{7\,a^{1/4}\,c^{9/2}\,\sqrt{a+b\,x^2}}$$

Result (type 4, 121 leaves):

$$\frac{x^{9/2}\left(-\frac{2\,\left(a+b\,x^2\right)\,\left(a+3\,b\,x^2\right)}{x^{7/2}}+\frac{8\,i\,b^2\,\sqrt{1+\frac{a}{b\,x^2}}\;x\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\,\sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]}{\sqrt{\frac{i\,\sqrt{a}}{\sqrt{b}}}}\right)}{7\,(c\,x)^{9/2}\,\sqrt{a+b\,x^2}}$$

Problem 606: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\left(a+b x^2\right)^{3/2}}{(c x)^{11/2}} \, dx$$

Optimal (type 4, 331 leaves, 7 steps):

$$-\frac{4 b \sqrt{a+b x^2}}{15 c^3 (c x)^{5/2}}-\frac{8 b^2 \sqrt{a+b x^2}}{15 a c^5 \sqrt{c x}}+\frac{8 b^{5/2} \sqrt{c x} \sqrt{a+b x^2}}{15 a c^6 \left(\sqrt{a}+\sqrt{b} x\right)}-\frac{2 \left(a+b x^2\right)^{3/2}}{9 c (c x)^{9/2}}-\frac{8 b^{9/4} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}} \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]}{15 a^{3/4} c^{11/2} \sqrt{a+b x^2}}+\frac{4 b^{9/4} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]}{15 a^{3/4} c^{11/2} \sqrt{a+b x^2}}$$

Result (type 4, 213 leaves):

$$-\left(\left(2 \sqrt{c x} \left(\sqrt{\frac{i \sqrt{b} x}{\sqrt{a}}} \left(5 a^3+16 a^2 b x^2+23 a b^2 x^4+12 b^3 x^6\right)-12 \sqrt{a} b^{5/2} x^5 \sqrt{1+\frac{b x^2}{a}} \text{EllipticE}\left[i \text{ArcSinh}\left[\sqrt{\frac{i \sqrt{b} x}{\sqrt{a}}}\right],-1\right]+12 \sqrt{a} b^{5/2} x^5 \sqrt{1+\frac{b x^2}{a}} \text{EllipticF}\left[i \text{ArcSinh}\left[\sqrt{\frac{i \sqrt{b} x}{\sqrt{a}}}\right],-1\right]\right)\right) \Big/ \left(45 a c^6 x^5 \sqrt{\frac{i \sqrt{b} x}{\sqrt{a}}} \sqrt{a+b x^2}\right)\right)$$

Problem 613: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 156 leaves, 4 steps):

$$-\frac{10 a c^3 \sqrt{c x} \sqrt{a+b x^2}}{21 b^2}+\frac{2 c (c x)^{5/2} \sqrt{a+b x^2}}{7 b}+\frac{1}{21 b^{9/4} \sqrt{a+b x^2}} 5 a^{7/4} c^{7/2} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]$$

Result (type 4, 144 leaves):

$$\left(2 c^3 \sqrt{c x} \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}} \left(-5 a^2-2 a b x^2+3 b^2 x^4\right)+5 i a^2 \sqrt{1+\frac{a}{b x^2}} \sqrt{x}\, \text{EllipticF}\left[i \,\text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]\right)\right)\bigg/\left(21 \sqrt{\frac{i \sqrt{a}}{\sqrt{b}}}\, b^2 \sqrt{a+b x^2}\right)$$

Problem 614: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 273 leaves, 5 steps):

$$\frac{2 c (c x)^{3/2} \sqrt{a+b x^2}}{5 b}-\frac{6 a c^2 \sqrt{c x} \sqrt{a+b x^2}}{5 b^{3/2} \left(\sqrt{a}+\sqrt{b} x\right)}+\frac{1}{5 b^{7/4} \sqrt{a+b x^2}} 6 a^{5/4} c^{5/2} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}}\, \text{EllipticE}\left[2 \,\text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]-\frac{1}{5 b^{7/4} \sqrt{a+b x^2}} 3 a^{5/4} c^{5/2} \left(\sqrt{a}+\sqrt{b} x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b} x\right)^2}}\, \text{EllipticF}\left[2 \,\text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]$$

Result (type 4, 177 leaves):

$$\left(2 c^2 \sqrt{c x} \left(\sqrt{b}\, x \sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}} \left(a+b x^2\right)-3 a^{3/2} \sqrt{1+\frac{b x^2}{a}}\, \text{EllipticE}\left[i \,\text{ArcSinh}\left[\sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}}\right],-1\right]+3 a^{3/2} \sqrt{1+\frac{b x^2}{a}}\, \text{EllipticF}\left[i \,\text{ArcSinh}\left[\sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}}\right],-1\right]\right)\right)\bigg/\left(5 b^{3/2} \sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}} \sqrt{a+b x^2}\right)$$

Problem 615: Result unnecessarily involves imaginary or complex numbers.

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

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

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

Result (type 4, 106 leaves):

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

Problem 616: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 236 leaves, 4 steps):

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

Result (type 4, 111 leaves):

$$\left(2\,i\,x\,\sqrt{c\,x}\,\sqrt{1+\frac{b\,x^2}{a}}\right.$$
$$\left.\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]\right)\right)\Big/$$
$$\left(\left(\frac{i\,\sqrt{b}\,x}{\sqrt{a}}\right)^{3/2}\sqrt{a+b\,x^2}\right)$$

Problem 617: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{\sqrt{c\,x}\,\sqrt{a+b\,x^2}}\,dx$$

Optimal (type 4, 97 leaves, 2 steps):

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

Result (type 4, 90 leaves):

$$\frac{2\,i\,\sqrt{1+\frac{a}{b\,x^2}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]}{\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}\,\sqrt{c\,x}\,\sqrt{a+b\,x^2}}$$

Problem 618: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 268 leaves, 5 steps):

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

Result (type 4, 176 leaves):

$$-\left(\left(2\,x\left(\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\,\left(a+b\,x^2\right)-\sqrt{a}\,\sqrt{b}\,x\,\sqrt{1+\frac{b\,x^2}{a}}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]+\sqrt{a}\,\sqrt{b}\,x\,\sqrt{1+\frac{b\,x^2}{a}}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]\right)\right)\Big/\left(a\,\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\,(c\,x)^{3/2}\,\sqrt{a+b\,x^2}\right)\right)$$

Problem 619: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 129 leaves, 3 steps):

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

Result (type 4, 109 leaves):

$$\frac{2\,x\left(-a-b\,x^2-\frac{i\,b\,\sqrt{1+\frac{a}{b\,x^2}}\,x^{5/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]}{\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}}\right)}{3\,a\,(c\,x)^{5/2}\,\sqrt{a+b\,x^2}}$$

Problem 620: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{(c\,x)^{7/2}\,\sqrt{a+b\,x^2}}\,dx$$

Optimal (type 4, 306 leaves, 6 steps):

$$-\frac{2\sqrt{a+b x^2}}{5 a c (c x)^{5/2}}+\frac{6 b\sqrt{a+b x^2}}{5 a^2 c^3\sqrt{c x}}-\frac{6 b^{3/2}\sqrt{c x}\sqrt{a+b x^2}}{5 a^2 c^4\left(\sqrt{a}+\sqrt{b}\,x\right)}+\frac{6 b^{5/4}\left(\sqrt{a}+\sqrt{b}\,x\right)\sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\sqrt{c x}}{a^{1/4}\sqrt{c}}\right],\frac{1}{2}\right]}{5 a^{7/4} c^{7/2}\sqrt{a+b x^2}}-\frac{3 b^{5/4}\left(\sqrt{a}+\sqrt{b}\,x\right)\sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\sqrt{c x}}{a^{1/4}\sqrt{c}}\right],\frac{1}{2}\right]}{5 a^{7/4} c^{7/2}\sqrt{a+b x^2}}$$

Result (type 4, 198 leaves) :

$$\left(x\left(2\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\left(-a^2+2 a b x^2+3 b^2 x^4\right)-6\sqrt{a}\,b^{3/2}x^3\sqrt{1+\frac{b x^2}{a}}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]+6\sqrt{a}\,b^{3/2}x^3\sqrt{1+\frac{b x^2}{a}}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]\right)\right)\Big/\left(5 a^2\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\,(c x)^{7/2}\sqrt{a+b x^2}\right)$$

Problem 621: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(c x)^{7/2}}{\left(a+b x^2\right)^{3/2}}\,dx$$

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

$$-\frac{c (c x)^{5/2}}{b\sqrt{a+b x^2}}+\frac{5 c^3\sqrt{c x}\sqrt{a+b x^2}}{3 b^2}-\frac{1}{6 b^{9/4}\sqrt{a+b x^2}}5 a^{3/4} c^{7/2}\left(\sqrt{a}+\sqrt{b}\,x\right)\sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\sqrt{c x}}{a^{1/4}\sqrt{c}}\right],\frac{1}{2}\right]$$

Result (type 4, 131 leaves) :

$$\left(c^3 \sqrt{c\,x} \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}} \left(5\,a+2\,b\,x^2\right)-5\,i\,a \sqrt{1+\frac{a}{b\,x^2}} \sqrt{x}\ \text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]\right)\right)\bigg/$$
$$\left(3 \sqrt{\frac{i \sqrt{a}}{\sqrt{b}}}\ b^2 \sqrt{a+b\,x^2}\right)$$

Problem 622: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 266 leaves, 5 steps):

$$-\frac{c\,(c\,x)^{3/2}}{b\sqrt{a+b\,x^2}}+\frac{3\,c^2\sqrt{c\,x}\,\sqrt{a+b\,x^2}}{b^{3/2}\left(\sqrt{a}+\sqrt{b}\,x\right)}-\frac{1}{b^{7/4}\sqrt{a+b\,x^2}}$$
$$3\,a^{1/4}\,c^{5/2}\left(\sqrt{a}+\sqrt{b}\,x\right)\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\ \text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\sqrt{c\,x}}{a^{1/4}\sqrt{c}}\right],\frac{1}{2}\right]+$$
$$\frac{1}{2\,b^{7/4}\sqrt{a+b\,x^2}}3\,a^{1/4}\,c^{5/2}\left(\sqrt{a}+\sqrt{b}\,x\right)\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\ \text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\sqrt{c\,x}}{a^{1/4}\sqrt{c}}\right],\frac{1}{2}\right]$$

Result (type 4, 168 leaves):

$$-\left(\left(c^2\sqrt{c\,x}\left(\sqrt{b}\,x\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}-3\sqrt{a}\sqrt{1+\frac{b\,x^2}{a}}\ \text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]+\right.\right.\right.$$
$$\left.\left.\left.3\sqrt{a}\sqrt{1+\frac{b\,x^2}{a}}\ \text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]\right)\right)\bigg/\left(b^{3/2}\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\sqrt{a+b\,x^2}\right)\right)$$

Problem 623: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 125 leaves, 3 steps):

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

Result (type 4, 115 leaves):

$$-\left(\left(c\sqrt{c\,x}\left(\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}-i\sqrt{1+\frac{a}{b\,x^2}}\sqrt{x}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}\,b\sqrt{a+b\,x^2}\right)\right)$$

Problem 624: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 266 leaves, 5 steps):

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

Result (type 4, 166 leaves):

$$\left(\sqrt{c\,x}\left(\sqrt{b}\,x\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}-\sqrt{a}\sqrt{1+\frac{b\,x^2}{a}}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]+\sqrt{a}\sqrt{1+\frac{b\,x^2}{a}}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]\right)\right)\Big/\left(a\sqrt{b}\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\sqrt{a+b\,x^2}\right)$$

Problem 625: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 126 leaves, 3 steps):

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

Result (type 4, 117 leaves):

$$\frac{x}{a\,\sqrt{c\,x}\,\sqrt{a+b\,x^2}}+\frac{\mathrm{i}\,\sqrt{1+\frac{a}{b\,x^2}}\ x^{3/2}\ \text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{\mathrm{i}\,\sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]}{a\,\sqrt{\frac{\mathrm{i}\,\sqrt{a}}{\sqrt{b}}}\,\sqrt{c\,x}\,\sqrt{a+b\,x^2}}$$

Problem 626: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 296 leaves, 6 steps):

$$\frac{1}{a\,c\,\sqrt{c\,x}\,\sqrt{a+b\,x^2}}-\frac{3\,\sqrt{a+b\,x^2}}{a^2\,c\,\sqrt{c\,x}}+\frac{3\,\sqrt{b}\,\sqrt{c\,x}\,\sqrt{a+b\,x^2}}{a^2\,c^2\left(\sqrt{a}+\sqrt{b}\,x\right)}-$$
$$\frac{3\,b^{1/4}\left(\sqrt{a}+\sqrt{b}\,x\right)\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\ \text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{a^{1/4}\,\sqrt{c}}\right],\frac{1}{2}\right]}{a^{7/4}\,c^{3/2}\,\sqrt{a+b\,x^2}}+$$
$$\frac{3\,b^{1/4}\left(\sqrt{a}+\sqrt{b}\,x\right)\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\ \text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{a^{1/4}\,\sqrt{c}}\right],\frac{1}{2}\right]}{2\,a^{7/4}\,c^{3/2}\,\sqrt{a+b\,x^2}}$$

Result (type 4, 180 leaves):

$$\left(x\left(-\sqrt{\frac{\mathrm{i}\,\sqrt{b}\,x}{\sqrt{a}}}\left(2\,a+3\,b\,x^2\right)+3\,\sqrt{a}\,\sqrt{b}\,x\,\sqrt{1+\frac{b\,x^2}{a}}\ \text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{\mathrm{i}\,\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]-\right.\right.$$
$$\left.\left.3\,\sqrt{a}\,\sqrt{b}\,x\,\sqrt{1+\frac{b\,x^2}{a}}\ \text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{\mathrm{i}\,\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]\right)\right)\Big/$$
$$\left(a^2\,\sqrt{\frac{\mathrm{i}\,\sqrt{b}\,x}{\sqrt{a}}}\,(c\,x)^{3/2}\,\sqrt{a+b\,x^2}\right)$$

Problem 627: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{(c\,x)^{5/2}\left(a+b\,x^2\right)^{3/2}}\,dx$$

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

$$\frac{1}{a\,c\,(c\,x)^{3/2}\,\sqrt{a+b\,x^2}}-\frac{5\,\sqrt{a+b\,x^2}}{3\,a^2\,c\,(c\,x)^{3/2}}-\frac{5\,b^{3/4}\,\left(\sqrt{a}+\sqrt{b}\,x\right)\,\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{a^{1/4}\,\sqrt{c}}\right],\frac{1}{2}\right]}{6\,a^{9/4}\,c^{5/2}\,\sqrt{a+b\,x^2}}$$

Result (type 4, 130 leaves):

$$\left(x\,\left(-\sqrt{\frac{i\,\sqrt{a}}{\sqrt{b}}}\,\left(2\,a+5\,b\,x^2\right)-5\,i\,b\,\sqrt{1+\frac{a}{b\,x^2}}\,x^{5/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\,\sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(3\,a^2\,\sqrt{\frac{i\,\sqrt{a}}{\sqrt{b}}}\,(c\,x)^{5/2}\,\sqrt{a+b\,x^2}\right)$$

Problem 628: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{(c\,x)^{7/2}\,\left(a+b\,x^2\right)^{3/2}}\,dx$$

Optimal (type 4, 331 leaves, 7 steps):

$$\frac{1}{a\,c\,(c\,x)^{5/2}\,\sqrt{a+b\,x^2}}-\frac{7\,\sqrt{a+b\,x^2}}{5\,a^2\,c\,(c\,x)^{5/2}}+\frac{21\,b\,\sqrt{a+b\,x^2}}{5\,a^3\,c^3\,\sqrt{c\,x}}-\frac{21\,b^{3/2}\,\sqrt{c\,x}\,\sqrt{a+b\,x^2}}{5\,a^3\,c^4\,\left(\sqrt{a}+\sqrt{b}\,x\right)}+\left(21\,b^{5/4}\,\left(\sqrt{a}+\sqrt{b}\,x\right)\,\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{a^{1/4}\,\sqrt{c}}\right],\frac{1}{2}\right]\right)\Big/\left(5\,a^{11/4}\,c^{7/2}\,\sqrt{a+b\,x^2}\right)-\left(21\,b^{5/4}\,\left(\sqrt{a}+\sqrt{b}\,x\right)\,\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{a^{1/4}\,\sqrt{c}}\right],\frac{1}{2}\right]\right)\Big/\left(10\,a^{11/4}\,c^{7/2}\,\sqrt{a+b\,x^2}\right)$$

Result (type 4, 197 leaves):

$$\left(x\left(\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\left(-2a^2+14abx^2+21b^2x^4\right)-21\sqrt{a}\,b^{3/2}x^3\sqrt{1+\frac{bx^2}{a}}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]+21\sqrt{a}\,b^{3/2}x^3\sqrt{1+\frac{bx^2}{a}}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]\right)\right)\Big/\left(5a^3\sqrt{\frac{i\sqrt{b}\,x}{\sqrt{a}}}\,(cx)^{7/2}\sqrt{a+bx^2}\right)$$

Problem 629: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(cx)^{7/2}}{\left(a+bx^2\right)^{5/2}}\,dx$$

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

$$-\frac{c\,(cx)^{5/2}}{3b\left(a+bx^2\right)^{3/2}}-\frac{5c^3\sqrt{cx}}{6b^2\sqrt{a+bx^2}}+\frac{5c^{7/2}\left(\sqrt{a}+\sqrt{b}\,x\right)\sqrt{\frac{a+bx^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\sqrt{cx}}{a^{1/4}\sqrt{c}}\right],\frac{1}{2}\right]}{12a^{1/4}b^{9/4}\sqrt{a+bx^2}}$$

Result (type 4, 117 leaves):

$$\frac{1}{6b^2\left(a+bx^2\right)^{3/2}}c^3\sqrt{cx}\left(-5a-7bx^2+\frac{5i\sqrt{1+\frac{a}{bx^2}}\,\sqrt{x}\,\left(a+bx^2\right)\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]}{\sqrt{\frac{i\sqrt{a}}{\sqrt{b}}}}\right)$$

Problem 630: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(cx)^{5/2}}{\left(a+bx^2\right)^{5/2}}\,dx$$

Optimal (type 4, 304 leaves, 6 steps):

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

$$\frac{c^{5/2}\,\left(\sqrt{a}+\sqrt{b}\,x\right)\,\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{a^{1/4}\,\sqrt{c}}\right],\,\frac{1}{2}\right]}{2\,a^{3/4}\,b^{7/4}\,\sqrt{a+b\,x^2}}-$$

$$\frac{c^{5/2}\,\left(\sqrt{a}+\sqrt{b}\,x\right)\,\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{a^{1/4}\,\sqrt{c}}\right],\,\frac{1}{2}\right]}{4\,a^{3/4}\,b^{7/4}\,\sqrt{a+b\,x^2}}$$

Result (type 4, 195 leaves) :

$$\left(c^2\,\sqrt{c\,x}\,\left(\sqrt{b}\,x\,\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\,\left(a+3\,b\,x^2\right)-3\,\sqrt{a}\,\left(a+b\,x^2\right)\,\sqrt{1+\frac{b\,x^2}{a}}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\right],\,-1\right]+3\,\sqrt{a}\,\left(a+b\,x^2\right)\,\sqrt{1+\frac{b\,x^2}{a}}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\right],\,-1\right]\right)\right)\Big/\left(6\,a\,b^{3/2}\,\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\,\left(a+b\,x^2\right)^{3/2}\right)$$

Problem 631: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 156 leaves, 4 steps) :

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

$$\frac{c^{3/2}\,\left(\sqrt{a}+\sqrt{b}\,x\right)\,\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{a^{1/4}\,\sqrt{c}}\right],\,\frac{1}{2}\right]}{12\,a^{5/4}\,b^{5/4}\,\sqrt{a+b\,x^2}}$$

Result (type 4, 137 leaves) :

$$\left(c\sqrt{c\,x}\left(\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{b}}}\left(-a+b\,x^2\right)+\mathrm{i}\sqrt{1+\frac{a}{b\,x^2}}\sqrt{x}\left(a+b\,x^2\right)\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(6\,a\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{b}}}\,b\left(a+b\,x^2\right)^{3/2}\right)$$

Problem 632: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 302 leaves, 6 steps):

$$\frac{(c\,x)^{3/2}}{3\,a\,c\left(a+b\,x^2\right)^{3/2}}+\frac{(c\,x)^{3/2}}{2\,a^2\,c\sqrt{a+b\,x^2}}-\frac{\sqrt{c\,x}\sqrt{a+b\,x^2}}{2\,a^2\sqrt{b}\left(\sqrt{a}+\sqrt{b}\,x\right)}+\frac{\sqrt{c}\left(\sqrt{a}+\sqrt{b}\,x\right)\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\sqrt{c\,x}}{a^{1/4}\sqrt{c}}\right],\frac{1}{2}\right]}{2\,a^{7/4}\,b^{3/4}\sqrt{a+b\,x^2}}-\frac{\sqrt{c}\left(\sqrt{a}+\sqrt{b}\,x\right)\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\sqrt{c\,x}}{a^{1/4}\sqrt{c}}\right],\frac{1}{2}\right]}{4\,a^{7/4}\,b^{3/4}\sqrt{a+b\,x^2}}$$

Result (type 4, 194 leaves):

$$\left(\mathrm{i}\,x\sqrt{c\,x}\left(\sqrt{b}\,x\sqrt{\frac{\mathrm{i}\sqrt{b}\,x}{\sqrt{a}}}\left(5\,a+3\,b\,x^2\right)-3\sqrt{a}\left(a+b\,x^2\right)\sqrt{1+\frac{b\,x^2}{a}}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{\mathrm{i}\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]+3\sqrt{a}\left(a+b\,x^2\right)\sqrt{1+\frac{b\,x^2}{a}}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{\mathrm{i}\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]\right)\right)\Big/\left(6\,a^{5/2}\left(\frac{\mathrm{i}\sqrt{b}\,x}{\sqrt{a}}\right)^{3/2}\left(a+b\,x^2\right)^{3/2}\right)$$

Problem 633: Result unnecessarily involves imaginary or complex numbers.

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

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

$$\frac{\sqrt{c x}}{3 a c \left(a+b x^2\right)^{3/2}}+\frac{5 \sqrt{c x}}{6 a^2 c \sqrt{a+b x^2}}+\frac{5 \left(\sqrt{a}+\sqrt{b}\, x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b}\, x\right)^2}}\ \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]}{12 a^{9/4} b^{1/4} \sqrt{c} \sqrt{a+b x^2}}$$

Result (type 4, 115 leaves):

$$\frac{x \left(7 a+5 b x^2+\frac{5 i \sqrt{1+\frac{a}{b x^2}} \sqrt{x} \left(a+b x^2\right) \text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right],-1\right]}{\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}}}\right)}{6 a^2 \sqrt{c x} \left(a+b x^2\right)^{3/2}}$$

Problem 634: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{(c x)^{3/2}\left(a+b x^2\right)^{5/2}}\,dx$$

Optimal (type 4, 333 leaves, 7 steps):

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

$$\frac{7 b^{1/4} \left(\sqrt{a}+\sqrt{b}\, x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b}\, x\right)^2}}\ \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]}{2 a^{11/4} c^{3/2} \sqrt{a+b x^2}}+$$

$$\frac{7 b^{1/4} \left(\sqrt{a}+\sqrt{b}\, x\right) \sqrt{\frac{a+b x^2}{\left(\sqrt{a}+\sqrt{b}\, x\right)^2}}\ \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right],\frac{1}{2}\right]}{4 a^{11/4} c^{3/2} \sqrt{a+b x^2}}$$

Result (type 4, 208 leaves):

$$\left(x \left(-\sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}} \left(12 a^2 + 35 a b x^2 + 21 b^2 x^4\right) + 21 \sqrt{a} \sqrt{b}\, x \left(a + b x^2\right) \sqrt{1 + \frac{b x^2}{a}}\, \text{EllipticE}\left[i\, \text{ArcSinh}\left[\sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}}\right], -1\right] - 21 \sqrt{a} \sqrt{b}\, x \left(a + b x^2\right) \sqrt{1 + \frac{b x^2}{a}}\, \text{EllipticF}\left[i\, \text{ArcSinh}\left[\sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}}\right], -1\right]\right)\right) \Big/ \left(6 a^3 \sqrt{\frac{i \sqrt{b}\, x}{\sqrt{a}}} (c x)^{3/2} \left(a + b x^2\right)^{3/2}\right)$$

Problem 635: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 185 leaves, 5 steps):

$$\frac{1}{3 a c (c x)^{3/2} \left(a + b x^2\right)^{3/2}} + \frac{3}{2 a^2 c (c x)^{3/2} \sqrt{a + b x^2}} - \frac{5 \sqrt{a + b x^2}}{2 a^3 c (c x)^{3/2}} - \frac{5 b^{3/4} \left(\sqrt{a} + \sqrt{b}\, x\right) \sqrt{\frac{a + b x^2}{\left(\sqrt{a} + \sqrt{b}\, x\right)^2}}\, \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{a^{1/4} \sqrt{c}}\right], \frac{1}{2}\right]}{4 a^{13/4} c^{5/2} \sqrt{a + b x^2}}$$

Result (type 4, 127 leaves):

$$\left(x \left(-4 a^2 - 21 a b x^2 - 15 b^2 x^4 - \frac{1}{\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}}} 15\, i\, b \sqrt{1 + \frac{a}{b x^2}}\, x^{5/2} \left(a + b x^2\right) \text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{b}}}}{\sqrt{x}}\right], -1\right]\right)\right) \Big/ \left(6 a^3 (c x)^{5/2} \left(a + b x^2\right)^{3/2}\right)$$

Problem 636: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{(c x)^{7/2} \left(a + b x^2\right)^{5/2}}\, dx$$

Optimal (type 4, 362 leaves, 8 steps):

$$\frac{1}{3\,a\,c\,(c\,x)^{5/2}\,\left(a+b\,x^2\right)^{3/2}}+\frac{11}{6\,a^2\,c\,(c\,x)^{5/2}\,\sqrt{a+b\,x^2}}-\frac{77\,\sqrt{a+b\,x^2}}{30\,a^3\,c\,(c\,x)^{5/2}}+\frac{77\,b\,\sqrt{a+b\,x^2}}{10\,a^4\,c^3\,\sqrt{c\,x}}-\frac{77\,b^{3/2}\,\sqrt{c\,x}\,\sqrt{a+b\,x^2}}{10\,a^4\,c^4\,\left(\sqrt{a}+\sqrt{b}\,x\right)}+$$
$$\left(77\,b^{5/4}\,\left(\sqrt{a}+\sqrt{b}\,x\right)\,\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{a^{1/4}\,\sqrt{c}}\right],\frac{1}{2}\right]\right)\Big/$$
$$\left(10\,a^{15/4}\,c^{7/2}\,\sqrt{a+b\,x^2}\right)-$$
$$\left(77\,b^{5/4}\,\left(\sqrt{a}+\sqrt{b}\,x\right)\,\sqrt{\frac{a+b\,x^2}{\left(\sqrt{a}+\sqrt{b}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{a^{1/4}\,\sqrt{c}}\right],\frac{1}{2}\right]\right)\Big/$$
$$\left(20\,a^{15/4}\,c^{7/2}\,\sqrt{a+b\,x^2}\right)$$

Result (type 4, 222 leaves):

$$\left(x\,\left(\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\,\left(-12\,a^3+132\,a^2\,b\,x^2+385\,a\,b^2\,x^4+231\,b^3\,x^6\right)-\right.\right.$$
$$231\,\sqrt{a}\,b^{3/2}\,x^3\,\left(a+b\,x^2\right)\,\sqrt{1+\frac{b\,x^2}{a}}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]+$$
$$\left.\left.231\,\sqrt{a}\,b^{3/2}\,x^3\,\left(a+b\,x^2\right)\,\sqrt{1+\frac{b\,x^2}{a}}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\right],-1\right]\right)\right)\Big/$$
$$\left(30\,a^4\,\sqrt{\frac{i\,\sqrt{b}\,x}{\sqrt{a}}}\,(c\,x)^{7/2}\,\left(a+b\,x^2\right)^{3/2}\right)$$

Problem 649: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 21 leaves, 2 steps):

$$\frac{2\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{a}\,\sqrt{x}\right],-1\right]}{\sqrt{a}}$$

Result (type 4, 65 leaves):

$$-\frac{2\,i\,\sqrt{-\frac{1}{a}}\,a\,\sqrt{1-\frac{1}{a^2 x^2}}\,x\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-\frac{1}{a}}}{\sqrt{x}}\right],-1\right]}{\sqrt{1-a^2 x^2}}$$

Problem 650: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 67 leaves, 2 steps):

$$\frac{\left(1+\sqrt{a}\,x\right)\sqrt{\frac{1+a\,x^2}{\left(1+\sqrt{a}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[a^{1/4}\,\sqrt{x}\right],\frac{1}{2}\right]}{a^{1/4}\,\sqrt{1+a\,x^2}}$$

Result (type 4, 68 leaves):

$$\frac{2\,i\,\sqrt{\frac{a+\frac{1}{x^2}}{a}}\,x\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i}{\sqrt{a}}}}{\sqrt{x}}\right],-1\right]}{\sqrt{\frac{i}{\sqrt{a}}}\,\sqrt{1+a\,x^2}}$$

Problem 651: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 50 leaves, 2 steps):

$$\frac{x^{1+m}\,\left(a+b\,x^2\right)^{5/2}\,\text{Hypergeometric2F1}\left[1,\frac{6+m}{2},\frac{3+m}{2},-\frac{b\,x^2}{a}\right]}{a\,(1+m)}$$

Result (type 5, 109 leaves):

$$\left(x^{1+m}\,\sqrt{a+b\,x^2}\,\left(a\,(3+m)\,\text{Hypergeometric2F1}\left[-\frac{1}{2},\frac{1+m}{2},\frac{3+m}{2},-\frac{b\,x^2}{a}\right]+b\,(1+m)\,x^2\,\text{Hypergeometric2F1}\left[-\frac{1}{2},\frac{3+m}{2},\frac{5+m}{2},-\frac{b\,x^2}{a}\right]\right)\right)\Big/\left((1+m)\,(3+m)\,\sqrt{1+\frac{b\,x^2}{a}}\right)$$

Problem 659: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 46 leaves, 2 steps):

$$\frac{x^m \sqrt{a+b x^2}\, \text{Hypergeometric2F1}\left[1, \frac{1+m}{2}, \frac{2+m}{2}, -\frac{b x^2}{a}\right]}{a\, m}$$

Result (type 5, 105 leaves):

$$\left(x^m \sqrt{a+b x^2} \left(a\, (2+m)\, \text{Hypergeometric2F1}\left[-\frac{1}{2}, \frac{m}{2}, 1+\frac{m}{2}, -\frac{b x^2}{a}\right] - b\, m\, x^2\, \text{Hypergeometric2F1}\left[\frac{1}{2}, 1+\frac{m}{2}, 2+\frac{m}{2}, -\frac{b x^2}{a}\right]\right)\right) \Big/ \left(a^2\, m\, (2+m) \sqrt{1+\frac{b x^2}{a}}\right)$$

Problem 660: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 51 leaves, 2 steps):

$$-\frac{x^{-1+m} \sqrt{a+b x^2}\, \text{Hypergeometric2F1}\left[1, \frac{m}{2}, \frac{1+m}{2}, -\frac{b x^2}{a}\right]}{a\, (1-m)}$$

Result (type 5, 110 leaves):

$$\left(x^{-1+m} \sqrt{a+b x^2} \left(a\, (1+m)\, \text{Hypergeometric2F1}\left[-\frac{1}{2}, \frac{1}{2}\, (-1+m), \frac{1+m}{2}, -\frac{b x^2}{a}\right] - b\, (-1+m)\, x^2\, \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{1+m}{2}, \frac{3+m}{2}, -\frac{b x^2}{a}\right]\right)\right) \Big/ \left(a^2\, (-1+m^2) \sqrt{1+\frac{b x^2}{a}}\right)$$

Problem 661: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{x^{1+m}\, (a\, (2+m) + b\, (3+m)\, x^2)}{\sqrt{a+b x^2}}\, dx$$

Optimal (type 3, 17 leaves, 1 step):

$$x^{2+m} \sqrt{a+b x^2}$$

Result (type 5, 97 leaves):

$$\frac{1}{(2+m) \sqrt{1+\frac{b x^2}{a}}} x^{2+m} \sqrt{a+b x^2} \left((3+m)\, \text{Hypergeometric2F1}\left[-\frac{1}{2}, 1+\frac{m}{2}, 2+\frac{m}{2}, -\frac{b x^2}{a}\right] - \text{Hypergeometric2F1}\left[\frac{1}{2}, 1+\frac{m}{2}, 2+\frac{m}{2}, -\frac{b x^2}{a}\right]\right)$$

Problem 662: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\left(\frac{a\,(2+m)\,x^{1+m}}{\sqrt{a+b\,x^2}}+\frac{b\,(3+m)\,x^{3+m}}{\sqrt{a+b\,x^2}}\right)dx$$

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

$$x^{2+m}\sqrt{a+b\,x^2}$$

Result (type 5, 97 leaves) :

$$\frac{1}{(2+m)\sqrt{1+\frac{b\,x^2}{a}}}x^{2+m}\sqrt{a+b\,x^2}\left((3+m)\,\text{Hypergeometric2F1}\left[-\frac{1}{2},1+\frac{m}{2},2+\frac{m}{2},-\frac{b\,x^2}{a}\right]-\text{Hypergeometric2F1}\left[\frac{1}{2},1+\frac{m}{2},2+\frac{m}{2},-\frac{b\,x^2}{a}\right]\right)$$

Problem 663: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{x^{-1+m}\,\left(a\,m+b\,(-1+m)\,x^2\right)}{\left(a+b\,x^2\right)^{3/2}}\,dx$$

Optimal (type 3, 15 leaves, 1 step) :

$$\frac{x^m}{\sqrt{a+b\,x^2}}$$

Result (type 5, 131 leaves) :

$$\left(x^m\sqrt{a+b\,x^2}\left(a\,(2+m)\,\text{Hypergeometric2F1}\left[-\frac{1}{2},\frac{m}{2},1+\frac{m}{2},-\frac{b\,x^2}{a}\right]-b\,x^2\left(m\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+\frac{m}{2},2+\frac{m}{2},-\frac{b\,x^2}{a}\right]+\text{Hypergeometric2F1}\left[\frac{3}{2},1+\frac{m}{2},2+\frac{m}{2},-\frac{b\,x^2}{a}\right]\right)\right)\right)\Big/\left(a^2\,(2+m)\sqrt{1+\frac{b\,x^2}{a}}\right)$$

Problem 664: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\left(-\frac{b\,x^{1+m}}{\left(a+b\,x^2\right)^{3/2}}+\frac{m\,x^{-1+m}}{\sqrt{a+b\,x^2}}\right)dx$$

Optimal (type 3, 15 leaves, ? steps):

$$\frac{x^m}{\sqrt{a+b x^2}}$$

Result (type 5, 131 leaves):

$$\left(x^m \sqrt{a+b x^2} \left(a (2+m) \text{Hypergeometric2F1}\left[-\frac{1}{2}, \frac{m}{2}, 1+\frac{m}{2}, -\frac{b x^2}{a}\right] - b x^2 \left(m \text{Hypergeometric2F1}\left[\frac{1}{2}, 1+\frac{m}{2}, 2+\frac{m}{2}, -\frac{b x^2}{a}\right] + \text{Hypergeometric2F1}\left[\frac{3}{2}, 1+\frac{m}{2}, 2+\frac{m}{2}, -\frac{b x^2}{a}\right]\right)\right)\right) \Big/ \left(a^2 (2+m) \sqrt{1+\frac{b x^2}{a}}\right)$$

Problem 669: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 101 leaves, 6 steps):

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

Result (type 5, 61 leaves):

$$\frac{6 \left(a+b x^2\right) - 3 a \left(1+\frac{a}{b x^2}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{2}{3}, \frac{2}{3}, \frac{5}{3}, -\frac{a}{b x^2}\right]}{4 \left(a+b x^2\right)^{2/3}}$$

Problem 670: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 107 leaves, 6 steps):

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

Result (type 5, 67 leaves):

$$\frac{-2 \left(a+b x^2\right) - b \left(1+\frac{a}{b x^2}\right)^{2/3} x^2 \text{Hypergeometric2F1}\left[\frac{2}{3}, \frac{2}{3}, \frac{5}{3}, -\frac{a}{b x^2}\right]}{4 x^2 \left(a+b x^2\right)^{2/3}}$$

Problem 671: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{1/3}}{x^5} \, dx$$

Optimal (type 3, 135 leaves, 7 steps):

$$-\frac{\left(a+b x^2\right)^{1/3}}{4 x^4}-\frac{b \left(a+b x^2\right)^{1/3}}{12 a x^2}+\frac{b^2 \text{ArcTan}\left[\frac{a^{1/3}+2 \left(a+b x^2\right)^{1/3}}{\sqrt{3} a^{1/3}}\right]}{6 \sqrt{3} a^{5/3}}+\frac{b^2 \text{Log}[x]}{18 a^{5/3}}-\frac{b^2 \text{Log}\left[a^{1/3}-\left(a+b x^2\right)^{1/3}\right]}{12 a^{5/3}}$$

Result (type 5, 82 leaves):

$$\left(-3 a^2-4 a b x^2-b^2 x^4+b^2 \left(1+\frac{a}{b x^2}\right)^{2/3} x^4 \, \text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{a}{b x^2}\right]\right) \Big/ \left(12 a x^4 \left(a+b x^2\right)^{2/3}\right)$$

Problem 672: Result unnecessarily involves higher level functions.

$$\int x^4 \left(a+b x^2\right)^{1/3} \, dx$$

Optimal (type 4, 314 leaves, 5 steps):

$$-\frac{54 a^2 x \left(a+b x^2\right)^{1/3}}{935 b^2}+\frac{6 a x^3 \left(a+b x^2\right)^{1/3}}{187 b}+\frac{3}{17} x^5 \left(a+b x^2\right)^{1/3}-$$
$$\left(54\times 3^{3/4} \sqrt{2-\sqrt{3}} \, a^3 \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right.$$
$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right) \Big/$$
$$\left(935 b^3 x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 90 leaves):

$$\left(3 \left(-18 a^3 x-8 a^2 b x^3+65 a b^2 x^5+55 b^3 x^7+\right.\right.$$
$$\left.\left.18 a^3 x \left(1+\frac{b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\right) \Big/ \left(935 b^2 \left(a+b x^2\right)^{2/3}\right)$$

Problem 673: Result unnecessarily involves higher level functions.

$$\int x^2 \left(a+b x^2\right)^{1/3} \, dx$$

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

$$\frac{6\,a\,x\,\left(a+b\,x^2\right)^{1/3}}{55\,b}+\frac{3}{11}\,x^3\,\left(a+b\,x^2\right)^{1/3}+\left(6\times 3^{3/4}\,\sqrt{2-\sqrt{3}}\;a^2\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)\,\sqrt{\frac{a^{2/3}+a^{1/3}\,\left(a+b\,x^2\right)^{1/3}+\left(a+b\,x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Bigg/\left(55\,b^2\,x\,\sqrt{-\frac{a^{1/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 78 leaves):

$$\frac{1}{55\,b\,\left(a+b\,x^2\right)^{2/3}}3\,x\,\left(2\,a^2+7\,a\,b\,x^2+5\,b^2\,x^4-2\,a^2\,\left(1+\frac{b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{2}{3},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]\right)$$

Problem 674: Result unnecessarily involves higher level functions.

$$\int\left(a+b\,x^2\right)^{1/3}\,dx$$

Optimal (type 4, 266 leaves, 3 steps):

$$\frac{3}{5}\,x\,\left(a+b\,x^2\right)^{1/3}-\left(2\times 3^{3/4}\,\sqrt{2-\sqrt{3}}\;a\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)\,\sqrt{\frac{a^{2/3}+a^{1/3}\,\left(a+b\,x^2\right)^{1/3}+\left(a+b\,x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Bigg/\left(5\,b\,x\,\sqrt{-\frac{a^{1/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 63 leaves):

$$\frac{3\,x\,\left(a+b\,x^2\right)+2\,a\,x\,\left(1+\frac{b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{2}{3},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]}{5\,\left(a+b\,x^2\right)^{2/3}}$$

Problem 675: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 260 leaves, 3 steps):

$$-\frac{\left(a+b x^2\right)^{1/3}}{x}-\left(2 \sqrt{2-\sqrt{3}} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}} \text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Bigg/\left(3^{1/4} x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 68 leaves):

$$-\frac{\left(a+b x^2\right)^{1/3}}{x}+\frac{2 b x \left(\frac{a+b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{3}{2},-\frac{b x^2}{a}\right]}{3 \left(a+b x^2\right)^{2/3}}$$

Problem 676: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{1/3}}{x^4} \, dx$$

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

$$-\frac{\left(a+b x^2\right)^{1/3}}{3 x^3}-\frac{2 b \left(a+b x^2\right)^{1/3}}{9 a x}+\left(2 \sqrt{2-\sqrt{3}}\, b \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}} \text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Bigg/\left(9\times 3^{1/4} a x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 88 leaves):

$$\left(-\frac{1}{3 x^3}-\frac{2 b}{9 a x}\right) \left(a+b x^2\right)^{1/3}-\frac{2 b^2 x \left(\frac{a+b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{3}{2},-\frac{b x^2}{a}\right]}{27 a \left(a+b x^2\right)^{2/3}}$$

Problem 681: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 101 leaves, 6 steps):

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

Result (type 5, 61 leaves):

$$\frac{3 \left(a+b x^2\right)-6 a \left(1+\frac{a}{b x^2}\right)^{1/3} \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},-\frac{a}{b x^2}\right]}{4 \left(a+b x^2\right)^{1/3}}$$

Problem 682: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 104 leaves, 6 steps):

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

Result (type 5, 67 leaves):

$$\frac{-a-b x^2-2 b \left(1+\frac{a}{b x^2}\right)^{1/3} x^2 \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},-\frac{a}{b x^2}\right]}{2 x^2 \left(a+b x^2\right)^{1/3}}$$

Problem 683: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{2/3}}{x^5} \, dx$$

Optimal (type 3, 135 leaves, 7 steps):

$$-\frac{\left(a+b x^2\right)^{2/3}}{4 x^4}-\frac{b \left(a+b x^2\right)^{2/3}}{6 a x^2}-\frac{b^2 \operatorname{ArcTan}\left[\frac{a^{1/3}+2 \left(a+b x^2\right)^{1/3}}{\sqrt{3}\, a^{1/3}}\right]}{6 \sqrt{3}\, a^{4/3}}+\frac{b^2 \operatorname{Log}[x]}{18 a^{4/3}}-\frac{b^2 \operatorname{Log}\left[a^{1/3}-\left(a+b x^2\right)^{1/3}\right]}{12 a^{4/3}}$$

Result (type 5, 83 leaves):

$$\left(-3 a^2-5 a b x^2-2 b^2 x^4+2 b^2 \left(1+\frac{a}{b x^2}\right)^{1/3} x^4 \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},-\frac{a}{b x^2}\right]\right) \Big/ \left(12 a x^4 \left(a+b x^2\right)^{1/3}\right)$$

Problem 684: Result unnecessarily involves higher level functions.

$$\int x^4 \left(a+b x^2\right)^{2/3} dx$$

Optimal (type 4, 601 leaves, 7 steps):

$$-\frac{108 a^2 x \left(a+b x^2\right)^{2/3}}{1729 b^2}+\frac{12 a x^3 \left(a+b x^2\right)^{2/3}}{247 b}+\frac{3}{19} x^5 \left(a+b x^2\right)^{2/3}-\frac{324 a^3 x}{1729 b^2 \left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}+$$
$$\left(162\times 3^{1/4} \sqrt{2+\sqrt{3}}\; a^{10/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right.$$
$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Big/$$
$$\left(1729 b^3 x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)-$$
$$\left(108 \sqrt{2}\; 3^{3/4} a^{10/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right.$$
$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Big/$$
$$\left(1729 b^3 x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 90 leaves):

$$\left(3 \left(-36 a^3 x-8 a^2 b x^3+119 a b^2 x^5+91 b^3 x^7+\right.\right.$$
$$\left.\left.36 a^3 x \left(1+\frac{b x^2}{a}\right)^{1/3} \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\right)\Big/\left(1729 b^2 \left(a+b x^2\right)^{1/3}\right)$$

Problem 685: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 577 leaves, 6 steps):

$$\frac{12\,a\,x\,\left(a+b\,x^2\right)^{2/3}}{91\,b}+\frac{3}{13}\,x^3\,\left(a+b\,x^2\right)^{2/3}+\frac{36\,a^2\,x}{91\,b\,\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}-$$

$$\left(18\times 3^{1/4}\,\sqrt{2+\sqrt{3}}\;a^{7/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)\,\sqrt{\frac{a^{2/3}+a^{1/3}\,\left(a+b\,x^2\right)^{1/3}+\left(a+b\,x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Bigg/$$

$$\left(91\,b^2\,x\,\sqrt{-\frac{a^{1/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right)+$$

$$\left(12\,\sqrt{2}\,3^{3/4}\,a^{7/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)\,\sqrt{\frac{a^{2/3}+a^{1/3}\,\left(a+b\,x^2\right)^{1/3}+\left(a+b\,x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Bigg/$$

$$\left(91\,b^2\,x\,\sqrt{-\frac{a^{1/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 79 leaves):

$$\frac{1}{91\,b\,\left(a+b\,x^2\right)^{1/3}}$$

$$3\,\left(4\,a^2\,x+11\,a\,b\,x^3+7\,b^2\,x^5-4\,a^2\,x\,\left(1+\frac{b\,x^2}{a}\right)^{1/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\,\frac{1}{2},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]\right)$$

Problem 686: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 550 leaves, 5 steps):

$$\frac{3}{7} x \left(a+b x^2\right)^{2/3}-\frac{12 a x}{7 \left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}+$$

$$\left(6\times 3^{1/4} \sqrt{2+\sqrt{3}}\ a^{4/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Big/$$

$$\left(7 b x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)-$$

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

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Big/$$

$$\left(7 b x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 63 leaves):

$$\frac{3 x \left(a+b x^2\right)+4 a x \left(1+\frac{b x^2}{a}\right)^{1/3} \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]}{7 \left(a+b x^2\right)^{1/3}}$$

Problem 687: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 538 leaves, 5 steps):

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

$$\left(2\times 3^{1/4}\sqrt{2+\sqrt{3}}\ a^{1/3}\left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)\sqrt{\frac{a^{2/3}+a^{1/3}\left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Bigg/$$

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

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

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Bigg/$$

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

Result (type 5, 68 leaves):

$$-\frac{\left(a+b x^2\right)^{2/3}}{x}+\frac{4 b x\left(\frac{a+b x^2}{a}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]}{3\left(a+b x^2\right)^{1/3}}$$

Problem 688: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 575 leaves, 6 steps):

$$-\frac{\left(a+b x^2\right)^{2/3}}{3 x^3}-\frac{4 b \left(a+b x^2\right)^{2/3}}{9 a x}-\frac{4 b^2 x}{9 a \left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}+$$

$$\left(2 \sqrt{2+\sqrt{3}}\ b \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right) \Big/$$

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

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

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right) \Big/$$

$$\left(9\times 3^{1/4} a^{2/3} x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 88 leaves):

$$\left(-\frac{1}{3 x^3}-\frac{4 b}{9 a x}\right) \left(a+b x^2\right)^{2/3}+\frac{4 b^2 x \left(\frac{a+b x^2}{a}\right)^{1/3} \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]}{27 a \left(a+b x^2\right)^{1/3}}$$

Problem 693: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 117 leaves, 7 steps):

$$\frac{3}{2} a \left(a+b x^2\right)^{1/3}+\frac{3}{8} \left(a+b x^2\right)^{4/3}-\frac{1}{2} \sqrt{3}\ a^{4/3} \text{ArcTan}\left[\frac{a^{1/3}+2 \left(a+b x^2\right)^{1/3}}{\sqrt{3}\ a^{1/3}}\right]-$$

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

Result (type 5, 76 leaves):

$$\frac{1}{8 \left(a+b x^2\right)^{2/3}}\left(3 \left(5 a^2+6 a b x^2+b^2 x^4\right)-6 a^2 \left(1+\frac{a}{b x^2}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{a}{b x^2}\right]\right)$$

Problem 694: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 116 leaves, 7 steps):

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

Result (type 5, 73 leaves):

$$\frac{a b-\frac{a^2}{2 x^2}+\frac{3 b^2 x^2}{2}-a b \left(1+\frac{a}{b x^2}\right)^{2/3} \operatorname{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{a}{b x^2}\right]}{\left(a+b x^2\right)^{2/3}}$$

Problem 695: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{4/3}}{x^5} \, dx$$

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

$$-\frac{b \left(a+b x^2\right)^{1/3}}{3 x^2}-\frac{\left(a+b x^2\right)^{4/3}}{4 x^4}-\frac{b^2 \operatorname{ArcTan}\left[\frac{a^{1/3}+2 \left(a+b x^2\right)^{1/3}}{\sqrt{3} a^{1/3}}\right]}{3 \sqrt{3} a^{2/3}}-\frac{b^2 \operatorname{Log}[x]}{9 a^{2/3}}+\frac{b^2 \operatorname{Log}\left[a^{1/3}-\left(a+b x^2\right)^{1/3}\right]}{6 a^{2/3}}$$

Result (type 5, 80 leaves):

$$\frac{1}{12 x^4 \left(a+b x^2\right)^{2/3}}\left(-3 a^2-10 a b x^2-7 b^2 x^4-2 b^2 \left(1+\frac{a}{b x^2}\right)^{2/3} x^4 \operatorname{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{a}{b x^2}\right]\right)$$

Problem 696: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 335 leaves, 6 steps):

$$-\frac{432\,a^3\,x\,\left(a+b\,x^2\right)^{1/3}}{21505\,b^2}+\frac{48\,a^2\,x^3\,\left(a+b\,x^2\right)^{1/3}}{4301\,b}+\frac{24}{391}\,a\,x^5\,\left(a+b\,x^2\right)^{1/3}+\frac{3}{23}\,x^5\,\left(a+b\,x^2\right)^{4/3}-\left(432\times 3^{3/4}\,\sqrt{2-\sqrt{3}}\,a^4\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)\sqrt{\frac{a^{2/3}+a^{1/3}\,\left(a+b\,x^2\right)^{1/3}+\left(a+b\,x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],-7+4\,\sqrt{3}\right]\right)\Bigg/\left(21505\,b^3\,x\,\sqrt{-\frac{a^{1/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 100 leaves):

$$\left(3\,x\,\left(-144\,a^4-64\,a^3\,b\,x^2+1455\,a^2\,b^2\,x^4+2310\,a\,b^3\,x^6+935\,b^4\,x^8+144\,a^4\,\left(1+\frac{b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{3}{2},-\frac{b\,x^2}{a}\right]\right)\right)\Bigg/\left(21505\,b^2\,\left(a+b\,x^2\right)^{2/3}\right)$$

Problem 697: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 311 leaves, 5 steps):

$$\frac{48\,a^2\,x\,\left(a+b\,x^2\right)^{1/3}}{935\,b}+\frac{24}{187}\,a\,x^3\,\left(a+b\,x^2\right)^{1/3}+\frac{3}{17}\,x^3\,\left(a+b\,x^2\right)^{4/3}+\left(48\times 3^{3/4}\,\sqrt{2-\sqrt{3}}\,a^3\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)\sqrt{\frac{a^{2/3}+a^{1/3}\,\left(a+b\,x^2\right)^{1/3}+\left(a+b\,x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],-7+4\,\sqrt{3}\right]\right)\Bigg/\left(935\,b^2\,x\,\sqrt{-\frac{a^{1/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 90 leaves):

$$\frac{1}{935\,b\,\left(a+b\,x^2\right)^{2/3}}3\,\left(16\,a^3\,x+111\,a^2\,b\,x^3+150\,a\,b^2\,x^5+55\,b^3\,x^7-16\,a^3\,x\,\left(1+\frac{b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{3}{2},-\frac{b\,x^2}{a}\right]\right)$$

Problem 698: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 285 leaves, 4 steps):

$$\frac{24}{55} a x \left(a+b x^2\right)^{1/3}+\frac{3}{11} x \left(a+b x^2\right)^{4/3}-\left(16\times 3^{3/4} \sqrt{2-\sqrt{3}}\, a^2 \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Big/\left(55 b x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 76 leaves):

$$\frac{1}{55 \left(a+b x^2\right)^{2/3}}\left(39 a^2 x+54 a b x^3+15 b^2 x^5+16 a^2 x \left(1+\frac{b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{3}{2},-\frac{b x^2}{a}\right]\right)$$

Problem 699: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 280 leaves, 4 steps):

$$\frac{8}{5} b x \left(a+b x^2\right)^{1/3}-\frac{\left(a+b x^2\right)^{4/3}}{x}-\left(16 \sqrt{2-\sqrt{3}}\, a \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Big/\left(5\times 3^{1/4} x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 78 leaves) :

$$\left(-\frac{a}{x}+\frac{3\,b\,x}{5}\right)\,\left(a+b\,x^2\right)^{1/3}+\frac{16\,a\,b\,x\,\left(\frac{a+b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{2}{3},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]}{15\,\left(a+b\,x^2\right)^{2/3}}$$

Problem 700: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 284 leaves, 4 steps) :

$$-\frac{8\,b\,\left(a+b\,x^2\right)^{1/3}}{9\,x}-\frac{\left(a+b\,x^2\right)^{4/3}}{3\,x^3}-\left(16\,\sqrt{2-\sqrt{3}}\,\,b\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)\,\sqrt{\frac{a^{2/3}+a^{1/3}\,\left(a+b\,x^2\right)^{1/3}+\left(a+b\,x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right.$$
$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Bigg/$$
$$\left(9\times3^{1/4}\,x\,\sqrt{-\frac{a^{1/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 80 leaves) :

$$\frac{1}{27\,x^3\,\left(a+b\,x^2\right)^{2/3}}$$
$$\left(-9\,a^2-42\,a\,b\,x^2-33\,b^2\,x^4+16\,b^2\,x^4\,\left(1+\frac{b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{2}{3},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]\right)$$

Problem 706: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 86 leaves, 5 steps) :

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

Result (type 5, 48 leaves) :

$$-\frac{3\,\left(1+\frac{a}{b\,x^2}\right)^{1/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\,\frac{1}{3},\,\frac{4}{3},\,-\frac{a}{b\,x^2}\right]}{2\,\left(a+b\,x^2\right)^{1/3}}$$

Problem 707: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 110 leaves, 6 steps):

$$-\frac{\left(a+b x^2\right)^{2/3}}{2 a x^2}-\frac{b \operatorname{ArcTan}\left[\frac{a^{1/3}+2 \left(a+b x^2\right)^{1/3}}{\sqrt{3}\, a^{1/3}}\right]}{2 \sqrt{3}\, a^{4/3}}+\frac{b \operatorname{Log}[x]}{6 a^{4/3}}-\frac{b \operatorname{Log}\left[a^{1/3}-\left(a+b x^2\right)^{1/3}\right]}{4 a^{4/3}}$$

Result (type 5, 69 leaves):

$$\frac{-a-b x^2+b \left(1+\frac{a}{b x^2}\right)^{1/3} x^2 \operatorname{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},-\frac{a}{b x^2}\right]}{2 a x^2 \left(a+b x^2\right)^{1/3}}$$

Problem 708: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^5 \left(a+b x^2\right)^{1/3}} \, dx$$

Optimal (type 3, 138 leaves, 7 steps):

$$-\frac{\left(a+b x^2\right)^{2/3}}{4 a x^4}+\frac{b \left(a+b x^2\right)^{2/3}}{3 a^2 x^2}+\frac{b^2 \operatorname{ArcTan}\left[\frac{a^{1/3}+2 \left(a+b x^2\right)^{1/3}}{\sqrt{3}\, a^{1/3}}\right]}{3 \sqrt{3}\, a^{7/3}}-\frac{b^2 \operatorname{Log}[x]}{9 a^{7/3}}+\frac{b^2 \operatorname{Log}\left[a^{1/3}-\left(a+b x^2\right)^{1/3}\right]}{6 a^{7/3}}$$

Result (type 5, 82 leaves):

$$\left(-3 a^2+a b x^2+4 b^2 x^4-4 b^2 \left(1+\frac{a}{b x^2}\right)^{1/3} x^4 \operatorname{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},-\frac{a}{b x^2}\right]\right) \Big/ \left(12 a^2 x^4 \left(a+b x^2\right)^{1/3}\right)$$

Problem 709: Result unnecessarily involves higher level functions.

$$\int \frac{x^4}{\left(a+b x^2\right)^{1/3}} \, dx$$

Optimal (type 4, 580 leaves, 6 steps):

$$-\frac{27\,a\,x\,\left(a+b\,x^2\right)^{2/3}}{91\,b^2}+\frac{3\,x^3\,\left(a+b\,x^2\right)^{2/3}}{13\,b}-\frac{81\,a^2\,x}{91\,b^2\,\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}+$$

$$\left(81\times 3^{1/4}\,\sqrt{2+\sqrt{3}}\;a^{7/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)\,\sqrt{\frac{a^{2/3}+a^{1/3}\,\left(a+b\,x^2\right)^{1/3}+\left(a+b\,x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Big/$$

$$\left(182\,b^3\,x\,\sqrt{-\frac{a^{1/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right)-$$

$$\left(27\,\sqrt{2}\;3^{3/4}\,a^{7/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)\,\sqrt{\frac{a^{2/3}+a^{1/3}\,\left(a+b\,x^2\right)^{1/3}+\left(a+b\,x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Big/$$

$$\left(91\,b^3\,x\,\sqrt{-\frac{a^{1/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 79 leaves) :

$$\frac{1}{91\,b^2\,\left(a+b\,x^2\right)^{1/3}}$$

$$3\,\left(-9\,a^2\,x-2\,a\,b\,x^3+7\,b^2\,x^5+9\,a^2\,x\,\left(1+\frac{b\,x^2}{a}\right)^{1/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\,\frac{1}{2},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]\right)$$

Problem 710: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 556 leaves, 5 steps) :

$$\frac{3 x \left(a+b x^2\right)^{2/3}}{7 b}+\frac{9 a x}{7 b \left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}-$$

$$\left(9\times 3^{1/4} \sqrt{2+\sqrt{3}}\; a^{4/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\texttt{EllipticE}\left[\texttt{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Big/$$

$$\left(14 b^2 x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)+$$

$$\left(3 \sqrt{2}\; 3^{3/4} a^{4/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\texttt{EllipticF}\left[\texttt{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Big/$$

$$\left(7 b^2 x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 62 leaves):

$$\frac{3 x \left(a+b x^2-a \left(1+\frac{b x^2}{a}\right)^{1/3} \texttt{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)}{7 b \left(a+b x^2\right)^{1/3}}$$

Problem 711: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 529 leaves, 4 steps):

$$-\frac{3x}{\left(1-\sqrt{3}\right)a^{1/3}-\left(a+b\,x^2\right)^{1/3}}+\left(3\times 3^{1/4}\sqrt{2+\sqrt{3}}\;a^{1/3}\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)\sqrt{\frac{a^{2/3}+a^{1/3}\left(a+b\,x^2\right)^{1/3}+\left(a+b\,x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Bigg/$$

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

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

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Bigg/$$

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

Result (type 5, 47 leaves):

$$\frac{x\left(\frac{a+b\,x^2}{a}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{3}{2},-\frac{b\,x^2}{a}\right]}{\left(a+b\,x^2\right)^{1/3}}$$

Problem 712: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 546 leaves, 5 steps):

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

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

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Big/$$

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

$$\left(\sqrt{2} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Big/$$

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

Result (type 5, 69 leaves) :

$$\frac{-3 \left(a+b x^2\right)+b x^2 \left(1+\frac{b x^2}{a}\right)^{1/3} \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]}{3 a x \left(a+b x^2\right)^{1/3}}$$

Problem 713: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^4 \left(a+b x^2\right)^{1/3}} \, dx$$

Optimal (type 4, 578 leaves, 6 steps) :

$$-\frac{\left(a+b x^2\right)^{2/3}}{3 a x^3}+\frac{5 b \left(a+b x^2\right)^{2/3}}{9 a^2 x}+\frac{5 b^2 x}{9 a^2 \left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}-$$

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

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Big/$$

$$\left(6\times 3^{3/4} a^{5/3} x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)+$$

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

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Big/$$

$$\left(9\times 3^{1/4} a^{5/3} x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 83 leaves) :

$$\left(-9 a^2+6 a b x^2+15 b^2 x^4-5 b^2 x^4 \left(1+\frac{b x^2}{a}\right)^{1/3} \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\Big/$$

$$\left(27 a^2 x^3 \left(a+b x^2\right)^{1/3}\right)$$

Problem 718: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 86 leaves, 5 steps) :

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

Result (type 5, 48 leaves) :

$$-\frac{3 \left(1+\frac{a}{b x^2}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{a}{b x^2}\right]}{4 \left(a+b x^2\right)^{2/3}}$$

Problem 719: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 107 leaves, 6 steps):

$$-\frac{\left(a+b x^2\right)^{1/3}}{2 a x^2}+\frac{b \operatorname{ArcTan}\left[\frac{a^{1/3}+2 \left(a+b x^2\right)^{1/3}}{\sqrt{3} a^{1/3}}\right]}{\sqrt{3} a^{5/3}}+\frac{b \operatorname{Log}[x]}{3 a^{5/3}}-\frac{b \operatorname{Log}\left[a^{1/3}-\left(a+b x^2\right)^{1/3}\right]}{2 a^{5/3}}$$

Result (type 5, 69 leaves):

$$\frac{-a-b x^2+b \left(1+\frac{a}{b x^2}\right)^{2/3} x^2 \operatorname{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{a}{b x^2}\right]}{2 a x^2 \left(a+b x^2\right)^{2/3}}$$

Problem 720: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^5 \left(a+b x^2\right)^{2/3}} \, dx$$

Optimal (type 3, 138 leaves, 7 steps):

$$-\frac{\left(a+b x^2\right)^{1/3}}{4 a x^4}+\frac{5 b \left(a+b x^2\right)^{1/3}}{12 a^2 x^2}-\frac{5 b^2 \operatorname{ArcTan}\left[\frac{a^{1/3}+2 \left(a+b x^2\right)^{1/3}}{\sqrt{3} a^{1/3}}\right]}{6 \sqrt{3} a^{8/3}}-\frac{5 b^2 \operatorname{Log}[x]}{18 a^{8/3}}+\frac{5 b^2 \operatorname{Log}\left[a^{1/3}-\left(a+b x^2\right)^{1/3}\right]}{12 a^{8/3}}$$

Result (type 5, 83 leaves):

$$\left(-3 a^2+2 a b x^2+5 b^2 x^4-5 b^2 \left(1+\frac{a}{b x^2}\right)^{2/3} x^4 \operatorname{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{a}{b x^2}\right]\right) \Big/ \left(12 a^2 x^4 \left(a+b x^2\right)^{2/3}\right)$$

Problem 721: Result unnecessarily involves higher level functions.

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

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

$$-\frac{27\,a\,x\,\left(a+b\,x^2\right)^{1/3}}{55\,b^2}+\frac{3\,x^3\,\left(a+b\,x^2\right)^{1/3}}{11\,b}-\left(27\times 3^{3/4}\,\sqrt{2-\sqrt{3}}\;a^2\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)\sqrt{\frac{a^{2/3}+a^{1/3}\,\left(a+b\,x^2\right)^{1/3}+\left(a+b\,x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Big/\left(55\,b^3\,x\,\sqrt{-\frac{a^{1/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 79 leaves):

$$\frac{1}{55\,b^2\,\left(a+b\,x^2\right)^{2/3}}\,3\left(-9\,a^2\,x-4\,a\,b\,x^3+5\,b^2\,x^5+9\,a^2\,x\,\left(1+\frac{b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{3}{2},-\frac{b\,x^2}{a}\right]\right)$$

Problem 722: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 269 leaves, 3 steps):

$$\frac{3\,x\,\left(a+b\,x^2\right)^{1/3}}{5\,b}+\left(3\times 3^{3/4}\,\sqrt{2-\sqrt{3}}\;a\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)\sqrt{\frac{a^{2/3}+a^{1/3}\,\left(a+b\,x^2\right)^{1/3}+\left(a+b\,x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Big/\left(5\,b^2\,x\,\sqrt{-\frac{a^{1/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 62 leaves):

$$\frac{3\,x\,\left(a+b\,x^2-a\,\left(1+\frac{b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{3}{2},-\frac{b\,x^2}{a}\right]\right)}{5\,b\,\left(a+b\,x^2\right)^{2/3}}$$

Problem 723: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 246 leaves, 2 steps):

$$-\left(\left(3^{3/4} \sqrt{2-\sqrt{3}} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}} \text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right], -7+4 \sqrt{3}\right]\right) \Bigg/ \left(b x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)\right)$$

Result (type 5, 47 leaves):

$$\frac{x \left(\frac{a+b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{2}{3}, \frac{3}{2}, -\frac{b x^2}{a}\right]}{\left(a+b x^2\right)^{2/3}}$$

Problem 724: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 265 leaves, 3 steps):

$$-\frac{\left(a+b x^2\right)^{1/3}}{a x}+\left(\sqrt{2-\sqrt{3}} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}} \text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right], -7+4 \sqrt{3}\right]\right) \Bigg/ \left(3^{1/4} a x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 70 leaves):

$$\frac{-3 \left(a+b x^2\right)-b x^2 \left(1+\frac{b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{2}{3}, \frac{3}{2}, -\frac{b x^2}{a}\right]}{3 a x \left(a+b x^2\right)^{2/3}}$$

Problem 725: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^4 \left(a+b x^2\right)^{2/3}} \, dx$$

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

$$-\frac{\left(a+b x^2\right)^{1/3}}{3 a x^3}+\frac{7 b \left(a+b x^2\right)^{1/3}}{9 a^2 x}-\left(7 \sqrt{2-\sqrt{3}}\, b \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right) \sqrt{\frac{a^{2/3}+a^{1/3} \left(a+b x^2\right)^{1/3}+\left(a+b x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}{\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right) \Big/ \left(9\times 3^{1/4} a^2 x \sqrt{-\frac{a^{1/3} \left(a^{1/3}-\left(a+b x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right) a^{1/3}-\left(a+b x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 83 leaves):

$$\left(-9 a^2+12 a b x^2+21 b^2 x^4+7 b^2 x^4 \left(1+\frac{b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{3}{2},-\frac{b x^2}{a}\right]\right) \Big/ \left(27 a^2 x^3 \left(a+b x^2\right)^{2/3}\right)$$

Problem 730: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x \left(a+b x^2\right)^{4/3}} \, dx$$

Optimal (type 3, 104 leaves, 6 steps):

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

Result (type 5, 55 leaves):

$$\frac{3-3 \left(1+\frac{a}{b x^2}\right)^{1/3} \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},-\frac{a}{b x^2}\right]}{2 a \left(a+b x^2\right)^{1/3}}$$

Problem 731: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^3 \left(a+b x^2\right)^{4/3}} \, dx$$

Optimal (type 3, 123 leaves, 7 steps):

$$-\frac{2\,b}{a^2\left(a+b\,x^2\right)^{1/3}}-\frac{1}{2\,a\,x^2\left(a+b\,x^2\right)^{1/3}}-\frac{2\,b\,\text{ArcTan}\left[\frac{a^{1/3}+2\left(a+b\,x^2\right)^{1/3}}{\sqrt{3}\,a^{1/3}}\right]}{\sqrt{3}\,a^{7/3}}+\frac{2\,b\,\text{Log}[x]}{3\,a^{7/3}}-\frac{b\,\text{Log}\left[a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right]}{a^{7/3}}$$

Result (type 5, 70 leaves):

$$\frac{-a-4\,b\,x^2+4\,b\left(1+\frac{a}{b\,x^2}\right)^{1/3}x^2\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},-\frac{a}{b\,x^2}\right]}{2\,a^2\,x^2\left(a+b\,x^2\right)^{1/3}}$$

Problem 732: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 159 leaves, 8 steps):

$$\frac{7\,b^2}{3\,a^3\left(a+b\,x^2\right)^{1/3}}-\frac{1}{4\,a\,x^4\left(a+b\,x^2\right)^{1/3}}+\frac{7\,b}{12\,a^2\,x^2\left(a+b\,x^2\right)^{1/3}}+\frac{7\,b^2\,\text{ArcTan}\left[\frac{a^{1/3}+2\left(a+b\,x^2\right)^{1/3}}{\sqrt{3}\,a^{1/3}}\right]}{3\sqrt{3}\,a^{10/3}}-\frac{7\,b^2\,\text{Log}[x]}{9\,a^{10/3}}+\frac{7\,b^2\,\text{Log}\left[a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right]}{6\,a^{10/3}}$$

Result (type 5, 83 leaves):

$$\left(-3\,a^2+7\,a\,b\,x^2+28\,b^2\,x^4-28\,b^2\left(1+\frac{a}{b\,x^2}\right)^{1/3}x^4\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},-\frac{a}{b\,x^2}\right]\right)\Big/\left(12\,a^3\,x^4\left(a+b\,x^2\right)^{1/3}\right)$$

Problem 733: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 577 leaves, 6 steps):

$$-\frac{3x^3}{2b\left(a+bx^2\right)^{1/3}}+\frac{27x\left(a+bx^2\right)^{2/3}}{14b^2}+\frac{81ax}{14b^2\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}\right)}-$$

$$\left(81\times 3^{1/4}\sqrt{2+\sqrt{3}}\;a^{4/3}\left(a^{1/3}-\left(a+bx^2\right)^{1/3}\right)\sqrt{\frac{a^{2/3}+a^{1/3}\left(a+bx^2\right)^{1/3}+\left(a+bx^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}}{\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Bigg/$$

$$\left(28b^3x\sqrt{-\frac{a^{1/3}\left(a^{1/3}-\left(a+bx^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}\right)^2}}\right)+$$

$$\left(27\times 3^{3/4}a^{4/3}\left(a^{1/3}-\left(a+bx^2\right)^{1/3}\right)\sqrt{\frac{a^{2/3}+a^{1/3}\left(a+bx^2\right)^{1/3}+\left(a+bx^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}}{\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Bigg/$$

$$\left(7\sqrt{2}\,b^3x\sqrt{-\frac{a^{1/3}\left(a^{1/3}-\left(a+bx^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 65 leaves):

$$\frac{3x\left(9a+2bx^2-9a\left(1+\frac{bx^2}{a}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{3}{2},-\frac{bx^2}{a}\right]\right)}{14b^2\left(a+bx^2\right)^{1/3}}$$

Problem 734: Result unnecessarily involves higher level functions.

$$\int\frac{x^2}{\left(a+bx^2\right)^{4/3}}\,dx$$

Optimal (type 4, 553 leaves, 5 steps):

$$-\frac{3x}{2b\left(a+bx^2\right)^{1/3}}-\frac{9x}{2b\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}\right)}+$$

$$\left(9\times 3^{1/4}\sqrt{2+\sqrt{3}}\;a^{1/3}\left(a^{1/3}-\left(a+bx^2\right)^{1/3}\right)\sqrt{\frac{a^{2/3}+a^{1/3}\left(a+bx^2\right)^{1/3}+\left(a+bx^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}}{\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Bigg/$$

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

$$\left(3\times 3^{3/4}a^{1/3}\left(a^{1/3}-\left(a+bx^2\right)^{1/3}\right)\sqrt{\frac{a^{2/3}+a^{1/3}\left(a+bx^2\right)^{1/3}+\left(a+bx^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}}{\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Bigg/$$

$$\left(\sqrt{2}\;b^2x\sqrt{-\frac{a^{1/3}\left(a^{1/3}-\left(a+bx^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 55 leaves) :

$$\frac{3x\left(-1+\left(1+\frac{bx^2}{a}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{3}{2},-\frac{bx^2}{a}\right]\right)}{2b\left(a+bx^2\right)^{1/3}}$$

Problem 735: Result unnecessarily involves higher level functions.

$$\int\frac{1}{\left(a+bx^2\right)^{4/3}}\,dx$$

Optimal (type 4, 552 leaves, 5 steps) :

$$\frac{3x}{2a\left(a+bx^2\right)^{1/3}}+\frac{3x}{2a\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}\right)}-$$
$$\left(3\times 3^{1/4}\sqrt{2+\sqrt{3}}\left(a^{1/3}-\left(a+bx^2\right)^{1/3}\right)\sqrt{\frac{a^{2/3}+a^{1/3}\left(a+bx^2\right)^{1/3}+\left(a+bx^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}\right)^2}}\right.$$
$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}}{\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Big/$$
$$\left(4a^{2/3}bx\sqrt{-\frac{a^{1/3}\left(a^{1/3}-\left(a+bx^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}\right)^2}}\right)+$$
$$\left(3^{3/4}\left(a^{1/3}-\left(a+bx^2\right)^{1/3}\right)\sqrt{\frac{a^{2/3}+a^{1/3}\left(a+bx^2\right)^{1/3}+\left(a+bx^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}\right)^2}}\right.$$
$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}}{\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Big/$$
$$\left(\sqrt{2}\,a^{2/3}bx\sqrt{-\frac{a^{1/3}\left(a^{1/3}-\left(a+bx^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)a^{1/3}-\left(a+bx^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 58 leaves) :

$$\frac{3x-x\left(1+\frac{bx^2}{a}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{3}{2},-\frac{bx^2}{a}\right]}{2a\left(a+bx^2\right)^{1/3}}$$

Problem 736: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^2\left(a+bx^2\right)^{4/3}}\,dx$$

Optimal (type 4, 571 leaves, 6 steps) :

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

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

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Big/$$

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

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

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Big/$$

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

Result (type 5, 70 leaves):

$$\frac{-6\,a-15\,b\,x^2+5\,b\,x^2\,\left(1+\frac{b\,x^2}{a}\right)^{1/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\,\frac{1}{2},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]}{6\,a^2\,x\,\left(a+b\,x^2\right)^{1/3}}$$

Problem 737: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^4\,\left(a+b\,x^2\right)^{4/3}}\,dx$$

Optimal (type 4, 599 leaves, 7 steps):

$$\frac{3}{2\,a\,x^3\,\left(a+b\,x^2\right)^{1/3}}-\frac{11\,\left(a+b\,x^2\right)^{2/3}}{6\,a^2\,x^3}+\frac{55\,b\,\left(a+b\,x^2\right)^{2/3}}{18\,a^3\,x}+\frac{55\,b^2\,x}{18\,a^3\,\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}-$$

$$\left(55\,\sqrt{2+\sqrt{3}}\;b\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)\sqrt{\frac{a^{2/3}+a^{1/3}\,\left(a+b\,x^2\right)^{1/3}+\left(a+b\,x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\bigg/$$

$$\left(12\times 3^{3/4}\,a^{8/3}\,x\,\sqrt{-\frac{a^{1/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right)+$$

$$\left(55\,b\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)\sqrt{\frac{a^{2/3}+a^{1/3}\,\left(a+b\,x^2\right)^{1/3}+\left(a+b\,x^2\right)^{2/3}}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\left(1+\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}{\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\bigg/$$

$$\left(9\,\sqrt{2}\;3^{1/4}\,a^{8/3}\,x\,\sqrt{-\frac{a^{1/3}\,\left(a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)}{\left(\left(1-\sqrt{3}\right)\,a^{1/3}-\left(a+b\,x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 83 leaves) :

$$\left(-18\,a^2+66\,a\,b\,x^2+165\,b^2\,x^4-55\,b^2\,x^4\,\left(1+\frac{b\,x^2}{a}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\,\frac{1}{2},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]\right)\bigg/$$
$$\left(54\,a^3\,x^3\,\left(a+b\,x^2\right)^{1/3}\right)$$

Problem 738: Result unnecessarily involves higher level functions.

$$\int (c\,x)^{13/3}\,\left(a+b\,x^2\right)^{1/3}\,dx$$

Optimal (type 3, 275 leaves, 12 steps) :

$$-\frac{5\,a^2\,c^3\,(c\,x)^{4/3}\,\left(a+b\,x^2\right)^{1/3}}{108\,b^2}+\frac{a\,c\,(c\,x)^{10/3}\,\left(a+b\,x^2\right)^{1/3}}{36\,b}+$$

$$\frac{(c\,x)^{16/3}\,\left(a+b\,x^2\right)^{1/3}}{6\,c}-\frac{5\,a^3\,c^{13/3}\,\text{ArcTan}\left[\frac{c^{2/3}+\frac{2\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{\sqrt{3}\;c^{2/3}}\right]}{54\,\sqrt{3}\;b^{8/3}}-$$

$$\frac{5\,a^3\,c^{13/3}\,\text{Log}\left[c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right]}{162\,b^{8/3}}+\frac{5\,a^3\,c^{13/3}\,\text{Log}\left[c^{4/3}+\frac{b^{2/3}\,(c\,x)^{4/3}}{\left(a+b\,x^2\right)^{2/3}}+\frac{b^{1/3}\,c^{2/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right]}{324\,b^{8/3}}$$

Result (type 5, 98 leaves) :

$$\left(c^3\ (c\,x)^{4/3}\left(-5\,a^3-2\,a^2\,b\,x^2+21\,a\,b^2\,x^4+18\,b^3\,x^6+5\,a^3\left(1+\frac{b\,x^2}{a}\right)^{2/3}\text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{b\,x^2}{a}\right]\right)\right)\Big/\left(108\,b^2\left(a+b\,x^2\right)^{2/3}\right)$$

Problem 739: Result unnecessarily involves higher level functions.

$$\int (c\,x)^{7/3}\left(a+b\,x^2\right)^{1/3}\,dx$$

Optimal (type 3, 244 leaves, 11 steps) :

$$\frac{a\,c\,(c\,x)^{4/3}\left(a+b\,x^2\right)^{1/3}}{12\,b}+\frac{(c\,x)^{10/3}\left(a+b\,x^2\right)^{1/3}}{4\,c}+\frac{a^2\,c^{7/3}\,\text{ArcTan}\left[\frac{c^{2/3}+\frac{2\,b^{1/3}\,(c\,x)^{2/3}}{(a+b\,x^2)^{1/3}}}{\sqrt{3}\,c^{2/3}}\right]}{6\,\sqrt{3}\,b^{5/3}}+\frac{a^2\,c^{7/3}\,\text{Log}\left[c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{(a+b\,x^2)^{1/3}}\right]}{18\,b^{5/3}}-\frac{a^2\,c^{7/3}\,\text{Log}\left[c^{4/3}+\frac{b^{2/3}\,(c\,x)^{4/3}}{(a+b\,x^2)^{2/3}}+\frac{b^{1/3}\,c^{2/3}\,(c\,x)^{2/3}}{(a+b\,x^2)^{1/3}}\right]}{36\,b^{5/3}}$$

Result (type 5, 83 leaves) :

$$\frac{1}{12\,b\left(a+b\,x^2\right)^{2/3}}c\,(c\,x)^{4/3}\left(a^2+4\,a\,b\,x^2+3\,b^2\,x^4-a^2\left(1+\frac{b\,x^2}{a}\right)^{2/3}\text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{b\,x^2}{a}\right]\right)$$

Problem 740: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 211 leaves, 10 steps) :

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

Result (type 5, 68 leaves) :

$$\frac{1}{4\left(a+b\,x^2\right)^{2/3}}x\,(c\,x)^{1/3}\left(2\left(a+b\,x^2\right)+a\left(1+\frac{b\,x^2}{a}\right)^{2/3}\text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{b\,x^2}{a}\right]\right)$$

Problem 741: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{1/3}}{(c x)^{5/3}} \, dx$$

Optimal (type 3, 208 leaves, 10 steps):

$$-\frac{3 \left(a+b x^2\right)^{1/3}}{2 c (c x)^{2/3}}-\frac{\sqrt{3}\, b^{1/3} \operatorname{ArcTan}\left[\frac{c^{2/3}+\frac{2 b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}}{\sqrt{3}\, c^{2/3}}\right]}{2 c^{5/3}}-\frac{b^{1/3} \operatorname{Log}\left[c^{2/3}-\frac{b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right]}{2 c^{5/3}}+\frac{b^{1/3} \operatorname{Log}\left[c^{4/3}+\frac{b^{2/3} (c x)^{4/3}}{\left(a+b x^2\right)^{2/3}}+\frac{b^{1/3} c^{2/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right]}{4 c^{5/3}}$$

Result (type 5, 72 leaves):

$$\left(x \left(-6 \left(a+b x^2\right)+3 b x^2 \left(1+\frac{b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{b x^2}{a}\right]\right)\right) \Big/ \left(4 (c x)^{5/3} \left(a+b x^2\right)^{2/3}\right)$$

Problem 746: Result unnecessarily involves higher level functions.

$$\int (c x)^{10/3} \left(a+b x^2\right)^{1/3} \, dx$$

Optimal (type 4, 451 leaves, 6 steps):

$$-\frac{14 a^2 c^3 (c x)^{1/3} \left(a+b x^2\right)^{1/3}}{135 b^2}+\frac{2 a c (c x)^{7/3} \left(a+b x^2\right)^{1/3}}{45 b}+\frac{(c x)^{13/3} \left(a+b x^2\right)^{1/3}}{5 c}+\left(7 a^2 c^{7/3} (c x)^{1/3} \left(a+b x^2\right)^{1/3} \left(c^{2/3}-\frac{b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right) \sqrt{\frac{c^{4/3}+\frac{b^{2/3} (c x)^{4/3}}{\left(a+b x^2\right)^{2/3}}+\frac{b^{1/3} c^{2/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}}{\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right)^2}} \operatorname{EllipticF}\left[\operatorname{ArcCos}\left[\frac{c^{2/3}-\frac{\left(1-\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}}{c^{2/3}-\frac{\left(1+\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right) \Big/ \left(135 \times 3^{1/4} b^2 \sqrt{-\frac{b^{1/3} (c x)^{2/3} \left(c^{2/3}-\frac{b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right)}{\left(a+b x^2\right)^{1/3} \left(c^{2/3}-\frac{\left(1+\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right)^2}}\right)$$

Result (type 5, 98 leaves):

$$\left(c^3 (c x)^{1/3} \left(-14 a^3 - 8 a^2 b x^2 + 33 a b^2 x^4 + 27 b^3 x^6 + 14 a^3 \left(1 + \frac{b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{6}, \frac{2}{3}, \frac{7}{6}, -\frac{b x^2}{a}\right]\right)\right) \Big/ \left(135 b^2 \left(a + b x^2\right)^{2/3}\right)$$

Problem 747: Result unnecessarily involves higher level functions.

$$\int (c x)^{4/3} \left(a + b x^2\right)^{1/3} dx$$

Optimal (type 4, 418 leaves, 5 steps):

$$\frac{2 a c (c x)^{1/3} \left(a + b x^2\right)^{1/3}}{9 b} + \frac{(c x)^{7/3} \left(a + b x^2\right)^{1/3}}{3 c} - \left(a c^{1/3} (c x)^{1/3} \left(a + b x^2\right)^{1/3} \left(c^{2/3} - \frac{b^{1/3} (c x)^{2/3}}{\left(a + b x^2\right)^{1/3}}\right) \sqrt{\frac{c^{4/3} + \frac{b^{2/3} (c x)^{4/3}}{\left(a+b x^2\right)^{2/3}} + \frac{b^{1/3} c^{2/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}}{\left(c^{2/3} - \frac{\left(1+\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right)^2}} \text{EllipticF}\left[\text{ArcCos}\left[\frac{c^{2/3} - \frac{\left(1-\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}}{c^{2/3} - \frac{\left(1+\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}}\right], \frac{1}{4} \left(2 + \sqrt{3}\right)\right]\right) \Big/ \left(9 \times 3^{1/4} b \sqrt{-\frac{b^{1/3} (c x)^{2/3} \left(c^{2/3} - \frac{b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right)}{\left(a + b x^2\right)^{1/3} \left(c^{2/3} - \frac{\left(1+\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right)^2}}\right)$$

Result (type 5, 85 leaves):

$$\frac{1}{9 b \left(a + b x^2\right)^{2/3}} c (c x)^{1/3} \left(2 a^2 + 5 a b x^2 + 3 b^2 x^4 - 2 a^2 \left(1 + \frac{b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{6}, \frac{2}{3}, \frac{7}{6}, -\frac{b x^2}{a}\right]\right)$$

Problem 748: Result unnecessarily involves higher level functions.

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

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

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

$$\left.\sqrt{\frac{c^{4/3}+\frac{b^{2/3}\,(c\,x)^{4/3}}{\left(a+b\,x^2\right)^{2/3}}+\frac{b^{1/3}\,c^{2/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\;\text{EllipticF}\left[\text{ArcCos}\left[\frac{c^{2/3}-\frac{\left(1-\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{c^{2/3}-\frac{\left(1+\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}\right],\,\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right)\Bigg/$$

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

Result (type 5, 63 leaves):

$$\frac{x\,\left(a+b\,x^2+2\,a\,\left(1+\frac{b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{6},\,\frac{2}{3},\,\frac{7}{6},\,-\frac{b\,x^2}{a}\right]\right)}{(c\,x)^{2/3}\,\left(a+b\,x^2\right)^{2/3}}$$

Problem 749: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+b\,x^2\right)^{1/3}}{(c\,x)^{8/3}}\,dx$$

Optimal (type 4, 391 leaves, 4 steps):

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

$$\left.\sqrt{\frac{c^{4/3}+\frac{b^{2/3}\,(c\,x)^{4/3}}{\left(a+b\,x^2\right)^{2/3}}+\frac{b^{1/3}\,c^{2/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\;\text{EllipticF}\left[\text{ArcCos}\left[\frac{c^{2/3}-\frac{\left(1-\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{c^{2/3}-\frac{\left(1+\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}\right],\,\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right)\Bigg/$$

$$\left(5\,a\,c^{11/3}\,\sqrt{-\frac{b^{1/3}\,(c\,x)^{2/3}\,\left(c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)}{\left(a+b\,x^2\right)^{1/3}\,\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\right)$$

Result (type 5, 69 leaves):

$$-\frac{3\,x\left(a+b\,x^2-2\,b\,x^2\left(1+\frac{b\,x^2}{a}\right)^{2/3}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{2}{3},\frac{7}{6},-\frac{b\,x^2}{a}\right]\right)}{5\,(c\,x)^{8/3}\left(a+b\,x^2\right)^{2/3}}$$

Problem 750: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+b\,x^2\right)^{1/3}}{(c\,x)^{14/3}}\,dx$$

Optimal (type 4, 422 leaves, 5 steps):

$$-\frac{3\left(a+b\,x^2\right)^{1/3}}{11\,c\,(c\,x)^{11/3}}-\frac{6\,b\left(a+b\,x^2\right)^{1/3}}{55\,a\,c^3\,(c\,x)^{5/3}}-\left(3\times 3^{3/4}\,b^2\,(c\,x)^{1/3}\left(a+b\,x^2\right)^{1/3}\left(c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)\sqrt{\frac{c^{4/3}+\frac{b^{2/3}\,(c\,x)^{4/3}}{\left(a+b\,x^2\right)^{2/3}}+\frac{b^{1/3}\,c^{2/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\;\text{EllipticF}\left[\text{ArcCos}\left[\frac{c^{2/3}-\frac{\left(1-\sqrt{3}\right)b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{c^{2/3}-\frac{\left(1+\sqrt{3}\right)b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right)\Bigg/\left(55\,a^2\,c^{17/3}\sqrt{-\frac{b^{1/3}\,(c\,x)^{2/3}\left(c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)}{\left(a+b\,x^2\right)^{1/3}\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\right)$$

Result (type 5, 93 leaves):

$$-\left(\left(3\,(c\,x)^{1/3}\left(5\,a^2+7\,a\,b\,x^2+2\,b^2\,x^4+6\,b^2\,x^4\left(1+\frac{b\,x^2}{a}\right)^{2/3}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{2}{3},\frac{7}{6},-\frac{b\,x^2}{a}\right]\right)\right)\Bigg/\left(55\,a\,c^5\,x^4\left(a+b\,x^2\right)^{2/3}\right)\right)$$

Problem 754: Result unnecessarily involves higher level functions.

$$\int(c\,x)^{13/3}\left(a+b\,x^2\right)^{4/3}\,dx$$

Optimal (type 3, 303 leaves, 13 steps):

$$-\frac{5 a^3 c^3 (c x)^{4/3} \left(a+b x^2\right)^{1/3}}{324 b^2}+\frac{a^2 c (c x)^{10/3} \left(a+b x^2\right)^{1/3}}{108 b}+$$

$$\frac{a (c x)^{16/3} \left(a+b x^2\right)^{1/3}}{18 c}+\frac{(c x)^{16/3} \left(a+b x^2\right)^{4/3}}{8 c}-\frac{5 a^4 c^{13/3} \text{ArcTan}\left[\frac{c^{2/3}+\frac{2 b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}}{\sqrt{3} c^{2/3}}\right]}{162 \sqrt{3} b^{8/3}}-$$

$$\frac{5 a^4 c^{13/3} \text{Log}\left[c^{2/3}-\frac{b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right]}{486 b^{8/3}}+\frac{5 a^4 c^{13/3} \text{Log}\left[c^{4/3}+\frac{b^{2/3} (c x)^{4/3}}{\left(a+b x^2\right)^{2/3}}+\frac{b^{1/3} c^{2/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right]}{972 b^{8/3}}$$

Result (type 5, 109 leaves):

$$\left(c^3 (c x)^{4/3} \left(-10 a^4-4 a^3 b x^2+123 a^2 b^2 x^4+198 a b^3 x^6+81 b^4 x^8+\right.\right.$$
$$\left.\left.10 a^4 \left(1+\frac{b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{b x^2}{a}\right]\right)\right)\Big/\left(648 b^2 \left(a+b x^2\right)^{2/3}\right)$$

Problem 755: Result unnecessarily involves higher level functions.

$$\int (c x)^{7/3} \left(a+b x^2\right)^{4/3} \, dx$$

Optimal (type 3, 272 leaves, 12 steps):

$$\frac{a^2 c (c x)^{4/3} \left(a+b x^2\right)^{1/3}}{27 b}+\frac{a (c x)^{10/3} \left(a+b x^2\right)^{1/3}}{9 c}+$$

$$\frac{(c x)^{10/3} \left(a+b x^2\right)^{4/3}}{6 c}+\frac{2 a^3 c^{7/3} \text{ArcTan}\left[\frac{c^{2/3}+\frac{2 b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}}{\sqrt{3} c^{2/3}}\right]}{27 \sqrt{3} b^{5/3}}+$$

$$\frac{2 a^3 c^{7/3} \text{Log}\left[c^{2/3}-\frac{b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right]}{81 b^{5/3}}-\frac{a^3 c^{7/3} \text{Log}\left[c^{4/3}+\frac{b^{2/3} (c x)^{4/3}}{\left(a+b x^2\right)^{2/3}}+\frac{b^{1/3} c^{2/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right]}{81 b^{5/3}}$$

Result (type 5, 96 leaves):

$$\frac{1}{54 b \left(a+b x^2\right)^{2/3}} c (c x)^{4/3}$$
$$\left(2 a^3+17 a^2 b x^2+24 a b^2 x^4+9 b^3 x^6-2 a^3 \left(1+\frac{b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{b x^2}{a}\right]\right)$$

Problem 756: Result unnecessarily involves higher level functions.

$$\int (c x)^{1/3} \left(a+b x^2\right)^{4/3} \, dx$$

Optimal (type 3, 243 leaves, 11 steps):

$$\frac{a\,(c\,x)^{4/3}\,\left(a+b\,x^2\right)^{1/3}}{3\,c}+\frac{(c\,x)^{4/3}\,\left(a+b\,x^2\right)^{4/3}}{4\,c}-\frac{a^2\,c^{1/3}\,\text{ArcTan}\left[\frac{c^{2/3}+\frac{2\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{\sqrt{3}\,c^{2/3}}\right]}{3\,\sqrt{3}\,b^{2/3}}-$$
$$\frac{a^2\,c^{1/3}\,\text{Log}\left[c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right]}{9\,b^{2/3}}+\frac{a^2\,c^{1/3}\,\text{Log}\left[c^{4/3}+\frac{b^{2/3}\,(c\,x)^{4/3}}{\left(a+b\,x^2\right)^{2/3}}+\frac{b^{1/3}\,c^{2/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right]}{18\,b^{2/3}}$$

Result (type 5, 83 leaves) :

$$\frac{1}{12\,\left(a+b\,x^2\right)^{2/3}}$$
$$(c\,x)^{1/3}\,\left(7\,a^2\,x+10\,a\,b\,x^3+3\,b^2\,x^5+2\,a^2\,x\,\left(1+\frac{b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{b\,x^2}{a}\right]\right)$$

Problem 757: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+b\,x^2\right)^{4/3}}{(c\,x)^{5/3}}\,dx$$

Optimal (type 3, 233 leaves, 11 steps) :

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

Result (type 5, 83 leaves) :

$$\left(x\,\left(-3\,a^2-2\,a\,b\,x^2+b^2\,x^4+2\,a\,b\,x^2\,\left(1+\frac{b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{b\,x^2}{a}\right]\right)\right)\Big/$$
$$\left(2\,(c\,x)^{5/3}\,\left(a+b\,x^2\right)^{2/3}\right)$$

Problem 758: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+b\,x^2\right)^{4/3}}{(c\,x)^{11/3}}\,dx$$

Optimal (type 3, 234 leaves, 11 steps) :

$$-\frac{3\,b\,\left(a+b\,x^2\right)^{1/3}}{2\,c^3\,(c\,x)^{2/3}}-\frac{3\,\left(a+b\,x^2\right)^{4/3}}{8\,c\,(c\,x)^{8/3}}-\frac{\sqrt{3}\,b^{4/3}\,\text{ArcTan}\left[\frac{c^{2/3}+\frac{2\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{\sqrt{3}\,c^{2/3}}\right]}{2\,c^{11/3}}-$$
$$\frac{b^{4/3}\,\text{Log}\left[c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right]}{2\,c^{11/3}}+\frac{b^{4/3}\,\text{Log}\left[c^{4/3}+\frac{b^{2/3}\,(c\,x)^{4/3}}{\left(a+b\,x^2\right)^{2/3}}+\frac{b^{1/3}\,c^{2/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right]}{4\,c^{11/3}}$$

Result (type 5, 83 leaves):

$$-\left(\left(3\,x\left(a^2+6\,a\,b\,x^2+5\,b^2\,x^4-2\,b^2\,x^4\left(1+\frac{b\,x^2}{a}\right)^{2/3}\text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{b\,x^2}{a}\right]\right)\right)\Big/\left(8\,(c\,x)^{11/3}\left(a+b\,x^2\right)^{2/3}\right)\right)$$

Problem 762: Result unnecessarily involves higher level functions.

$$\int (c\,x)^{10/3}\left(a+b\,x^2\right)^{4/3}\,dx$$

Optimal (type 4, 479 leaves, 7 steps):

$$-\frac{16\,a^3\,c^3\,(c\,x)^{1/3}\left(a+b\,x^2\right)^{1/3}}{405\,b^2}+\frac{16\,a^2\,c\,(c\,x)^{7/3}\left(a+b\,x^2\right)^{1/3}}{945\,b}+\frac{8\,a\,(c\,x)^{13/3}\left(a+b\,x^2\right)^{1/3}}{105\,c}+\frac{(c\,x)^{13/3}\left(a+b\,x^2\right)^{4/3}}{7\,c}+$$
$$\left(8\,a^3\,c^{7/3}\,(c\,x)^{1/3}\left(a+b\,x^2\right)^{1/3}\left(c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)\sqrt{\frac{c^{4/3}+\frac{b^{2/3}\,(c\,x)^{4/3}}{\left(a+b\,x^2\right)^{2/3}}+\frac{b^{1/3}\,c^{2/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\right.$$
$$\left.\text{EllipticF}\left[\text{ArcCos}\left[\frac{c^{2/3}-\frac{\left(1-\sqrt{3}\right)b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{c^{2/3}-\frac{\left(1+\sqrt{3}\right)b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right)\Big/$$
$$\left(405\times 3^{1/4}\,b^2\sqrt{-\frac{b^{1/3}\,(c\,x)^{2/3}\left(c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)}{\left(a+b\,x^2\right)^{1/3}\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\right)$$

Result (type 5, 109 leaves):

$$\left(c^3\,(c\,x)^{1/3}\left(-112\,a^4-64\,a^3\,b\,x^2+669\,a^2\,b^2\,x^4+1026\,a\,b^3\,x^6+405\,b^4\,x^8+\right.\right.$$
$$\left.\left.112\,a^4\left(1+\frac{b\,x^2}{a}\right)^{2/3}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{2}{3},\frac{7}{6},-\frac{b\,x^2}{a}\right]\right)\right)\Big/\left(2835\,b^2\left(a+b\,x^2\right)^{2/3}\right)$$

Problem 763: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 448 leaves, 6 steps):

$$\frac{16 a^2 c (c x)^{1/3} \left(a+b x^2\right)^{1/3}}{135 b}+\frac{8 a (c x)^{7/3} \left(a+b x^2\right)^{1/3}}{45 c}+\frac{(c x)^{7/3} \left(a+b x^2\right)^{4/3}}{5 c}-\left(8 a^2 c^{1/3} (c x)^{1/3} \left(a+b x^2\right)^{1/3} \left(c^{2/3}-\frac{b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right) \sqrt{\frac{c^{4/3}+\frac{b^{2/3} (c x)^{4/3}}{\left(a+b x^2\right)^{2/3}}+\frac{b^{1/3} c^{2/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}}{\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right)^2}} \text{EllipticF}\left[\text{ArcCos}\left[\frac{c^{2/3}-\frac{\left(1-\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}}{c^{2/3}-\frac{\left(1+\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right) \Big/ \left(135 \times 3^{1/4} b \sqrt{-\frac{b^{1/3} (c x)^{2/3} \left(c^{2/3}-\frac{b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right)}{\left(a+b x^2\right)^{1/3} \left(c^{2/3}-\frac{\left(1+\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right)^2}}\right)$$

Result (type 5, 96 leaves):

$$\frac{1}{135 b \left(a+b x^2\right)^{2/3}} c (c x)^{1/3} \left(16 a^3+67 a^2 b x^2+78 a b^2 x^4+27 b^3 x^6-16 a^3 \left(1+\frac{b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{2}{3},\frac{7}{6},-\frac{b x^2}{a}\right]\right)$$

Problem 764: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 414 leaves, 5 steps):

$$\frac{8 a (c x)^{1/3} \left(a+b x^2\right)^{1/3}}{9 c}+\frac{(c x)^{1/3} \left(a+b x^2\right)^{4/3}}{3 c}+$$

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

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

$$\left(9\times 3^{1/4} c^{5/3} \sqrt{-\frac{b^{1/3} (c x)^{2/3} \left(c^{2/3}-\frac{b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right)}{\left(a+b x^2\right)^{1/3} \left(c^{2/3}-\frac{\left(1+\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right)^2}}\right)$$

Result (type 5, 83 leaves):

$$\left(11 a^2 x+14 a b x^3+3 b^2 x^5+16 a^2 x \left(1+\frac{b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{2}{3},\frac{7}{6},-\frac{b x^2}{a}\right]\right)\Big/$$

$$\left(9 (c x)^{2/3} \left(a+b x^2\right)^{2/3}\right)$$

Problem 765: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{4/3}}{(c x)^{8/3}} \, dx$$

Optimal (type 4, 414 leaves, 5 steps):

$$\frac{8\,b\,(c\,x)^{1/3}\,\left(a+b\,x^2\right)^{1/3}}{5\,c^3}-\frac{3\,\left(a+b\,x^2\right)^{4/3}}{5\,c\,(c\,x)^{5/3}}+\left(8\,b\,(c\,x)^{1/3}\,\left(a+b\,x^2\right)^{1/3}\,\left(c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)\sqrt{\frac{c^{4/3}+\frac{b^{2/3}\,(c\,x)^{4/3}}{\left(a+b\,x^2\right)^{2/3}}+\frac{b^{1/3}\,c^{2/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\;\text{EllipticF}\left[\text{ArcCos}\left[\frac{c^{2/3}-\frac{\left(1-\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{c^{2/3}-\frac{\left(1+\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right)\Bigg/\left(5\times 3^{1/4}\,c^{11/3}\sqrt{-\frac{b^{1/3}\,(c\,x)^{2/3}\,\left(c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)}{\left(a+b\,x^2\right)^{1/3}\,\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\right)$$

Result (type 5, 84 leaves):

$$\left(x\left(-3\,a^2+2\,a\,b\,x^2+5\,b^2\,x^4+16\,a\,b\,x^2\left(1+\frac{b\,x^2}{a}\right)^{2/3}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{2}{3},\frac{7}{6},-\frac{b\,x^2}{a}\right]\right)\right)\Big/\left(5\,(c\,x)^{8/3}\,\left(a+b\,x^2\right)^{2/3}\right)$$

Problem 766: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+b\,x^2\right)^{4/3}}{(c\,x)^{14/3}}\,dx$$

Optimal (type 4, 419 leaves, 5 steps):

$$-\frac{24\,b\,\left(a+b\,x^2\right)^{1/3}}{55\,c^3\,(c\,x)^{5/3}}-\frac{3\,\left(a+b\,x^2\right)^{4/3}}{11\,c\,(c\,x)^{11/3}}+$$

$$\left(8\times 3^{3/4}\,b^2\,(c\,x)^{1/3}\,\left(a+b\,x^2\right)^{1/3}\,\left(c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)\sqrt{\frac{c^{4/3}+\frac{b^{2/3}\,(c\,x)^{4/3}}{\left(a+b\,x^2\right)^{2/3}}+\frac{b^{1/3}\,c^{2/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\right.$$

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

$$\left(55\,a\,c^{17/3}\,\sqrt{-\frac{b^{1/3}\,(c\,x)^{2/3}\,\left(c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)}{\left(a+b\,x^2\right)^{1/3}\,\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\right)$$

Result (type 5, 90 leaves) :

$$\left(3\,(c\,x)^{1/3}\right.$$

$$\left.\left(-5\,a^2-18\,a\,b\,x^2-13\,b^2\,x^4+16\,b^2\,x^4\,\left(1+\frac{b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{2}{3},\frac{7}{6},-\frac{b\,x^2}{a}\right]\right)\right)\Big/\left(55\right.$$

$$\left.c^5\,x^4\,\left(a+b\,x^2\right)^{2/3}\right)$$

Problem 767: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+b\,x^2\right)^{4/3}}{(c\,x)^{20/3}}\,dx$$

Optimal (type 4, 450 leaves, 6 steps) :

$$-\frac{24 b \left(a+b x^2\right)^{1/3}}{187 c^3 (c x)^{11/3}}-\frac{48 b^2 \left(a+b x^2\right)^{1/3}}{935 a c^5 (c x)^{5/3}}-\frac{3 \left(a+b x^2\right)^{4/3}}{17 c (c x)^{17/3}}-$$

$$\left(24\times 3^{3/4} b^3 (c x)^{1/3} \left(a+b x^2\right)^{1/3} \left(c^{2/3}-\frac{b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right) \sqrt{\frac{c^{4/3}+\frac{b^{2/3} (c x)^{4/3}}{\left(a+b x^2\right)^{2/3}}+\frac{b^{1/3} c^{2/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}}{\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right)^2}}\right.$$

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

$$\left(935 a^2 c^{23/3} \sqrt{-\frac{b^{1/3} (c x)^{2/3} \left(c^{2/3}-\frac{b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right)}{\left(a+b x^2\right)^{1/3} \left(c^{2/3}-\frac{\left(1+\sqrt{3}\right) b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right)^2}}\right)$$

Result (type 5, 104 leaves):

$$-\left(\left(3 (c x)^{1/3} \left(55 a^3+150 a^2 b x^2+111 a b^2 x^4+16 b^3 x^6+\right.\right.\right.$$

$$\left.\left.\left.48 b^3 x^6 \left(1+\frac{b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{2}{3},\frac{7}{6},-\frac{b x^2}{a}\right]\right)\right)\Big/\left(935 a c^7 x^6 \left(a+b x^2\right)^{2/3}\right)\right)$$

Problem 771: Result unnecessarily involves higher level functions.

$$\int \frac{(c x)^{19/3}}{\left(a+b x^2\right)^{2/3}} \, dx$$

Optimal (type 3, 278 leaves, 12 steps):

$$\frac{10 a^2 c^5 (c x)^{4/3} \left(a+b x^2\right)^{1/3}}{27 b^3}-\frac{2 a c^3 (c x)^{10/3} \left(a+b x^2\right)^{1/3}}{9 b^2}+$$

$$\frac{c (c x)^{16/3} \left(a+b x^2\right)^{1/3}}{6 b}+\frac{20 a^3 c^{19/3} \text{ArcTan}\left[\frac{c^{2/3}+\frac{2 b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}}{\sqrt{3} c^{2/3}}\right]}{27 \sqrt{3} b^{11/3}}+$$

$$\frac{20 a^3 c^{19/3} \text{Log}\left[c^{2/3}-\frac{b^{1/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right]}{81 b^{11/3}}-\frac{10 a^3 c^{19/3} \text{Log}\left[c^{4/3}+\frac{b^{2/3} (c x)^{4/3}}{\left(a+b x^2\right)^{2/3}}+\frac{b^{1/3} c^{2/3} (c x)^{2/3}}{\left(a+b x^2\right)^{1/3}}\right]}{81 b^{11/3}}$$

Result (type 5, 98 leaves):

$$\frac{1}{54\, b^3 \left(a+b\, x^2\right)^{2/3}} c^5\, (c\, x)^{4/3} \left(20\, a^3+8\, a^2\, b\, x^2-3\, a\, b^2\, x^4+9\, b^3\, x^6-20\, a^3 \left(1+\frac{b\, x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{b\, x^2}{a}\right]\right)$$

Problem 772: Result unnecessarily involves higher level functions.

$$\int \frac{(c\, x)^{13/3}}{\left(a+b\, x^2\right)^{2/3}}\, dx$$

Optimal (type 3, 247 leaves, 11 steps):

$$-\frac{5\, a\, c^3\, (c\, x)^{4/3} \left(a+b\, x^2\right)^{1/3}}{12\, b^2}+\frac{c\, (c\, x)^{10/3} \left(a+b\, x^2\right)^{1/3}}{4\, b}-\frac{5\, a^2\, c^{13/3} \text{ArcTan}\left[\frac{c^{2/3}+\frac{2\, b^{1/3}\, (c\, x)^{2/3}}{\left(a+b\, x^2\right)^{1/3}}}{\sqrt{3}\, c^{2/3}}\right]}{6\, \sqrt{3}\, b^{8/3}}-\frac{5\, a^2\, c^{13/3} \text{Log}\left[c^{2/3}-\frac{b^{1/3}\, (c\, x)^{2/3}}{\left(a+b\, x^2\right)^{1/3}}\right]}{18\, b^{8/3}}+\frac{5\, a^2\, c^{13/3} \text{Log}\left[c^{4/3}+\frac{b^{2/3}\, (c\, x)^{4/3}}{\left(a+b\, x^2\right)^{2/3}}+\frac{b^{1/3}\, c^{2/3}\, (c\, x)^{2/3}}{\left(a+b\, x^2\right)^{1/3}}\right]}{36\, b^{8/3}}$$

Result (type 5, 87 leaves):

$$\frac{1}{12\, b^2 \left(a+b\, x^2\right)^{2/3}} c^3\, (c\, x)^{4/3} \left(-5\, a^2-2\, a\, b\, x^2+3\, b^2\, x^4+5\, a^2 \left(1+\frac{b\, x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{b\, x^2}{a}\right]\right)$$

Problem 773: Result unnecessarily involves higher level functions.

$$\int \frac{(c\, x)^{7/3}}{\left(a+b\, x^2\right)^{2/3}}\, dx$$

Optimal (type 3, 209 leaves, 10 steps):

$$\frac{c\, (c\, x)^{4/3} \left(a+b\, x^2\right)^{1/3}}{2\, b}+\frac{a\, c^{7/3} \text{ArcTan}\left[\frac{c^{2/3}+\frac{2\, b^{1/3}\, (c\, x)^{2/3}}{\left(a+b\, x^2\right)^{1/3}}}{\sqrt{3}\, c^{2/3}}\right]}{\sqrt{3}\, b^{5/3}}+\frac{a\, c^{7/3} \text{Log}\left[c^{2/3}-\frac{b^{1/3}\, (c\, x)^{2/3}}{\left(a+b\, x^2\right)^{1/3}}\right]}{3\, b^{5/3}}-\frac{a\, c^{7/3} \text{Log}\left[c^{4/3}+\frac{b^{2/3}\, (c\, x)^{4/3}}{\left(a+b\, x^2\right)^{2/3}}+\frac{b^{1/3}\, c^{2/3}\, (c\, x)^{2/3}}{\left(a+b\, x^2\right)^{1/3}}\right]}{6\, b^{5/3}}$$

Result (type 5, 69 leaves):

$$\frac{1}{2\, b \left(a+b\, x^2\right)^{2/3}} c\, (c\, x)^{4/3} \left(a+b\, x^2-a \left(1+\frac{b\, x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{b\, x^2}{a}\right]\right)$$

Problem 774: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 183 leaves, 9 steps):

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

Result (type 5, 57 leaves):

$$\frac{3\,x\,(c\,x)^{1/3}\left(\frac{a+b\,x^2}{a}\right)^{2/3}\mathrm{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},-\frac{b\,x^2}{a}\right]}{4\left(a+b\,x^2\right)^{2/3}}$$

Problem 779: Result unnecessarily involves higher level functions.

$$\int \frac{(c\,x)^{10/3}}{\left(a+b\,x^2\right)^{2/3}}\,dx$$

Optimal (type 4, 421 leaves, 5 steps):

$$-\frac{7\,a\,c^3\,(c\,x)^{1/3}\left(a+b\,x^2\right)^{1/3}}{9\,b^2}+\frac{c\,(c\,x)^{7/3}\left(a+b\,x^2\right)^{1/3}}{3\,b}+\left(7\,a\,c^{7/3}\,(c\,x)^{1/3}\left(a+b\,x^2\right)^{1/3}\left(c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)\sqrt{\frac{c^{4/3}+\frac{b^{2/3}\,(c\,x)^{4/3}}{\left(a+b\,x^2\right)^{2/3}}+\frac{b^{1/3}\,c^{2/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\;\mathrm{EllipticF}\left[\mathrm{ArcCos}\left[\frac{c^{2/3}-\frac{\left(1-\sqrt{3}\right)b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{c^{2/3}-\frac{\left(1+\sqrt{3}\right)b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\right)\Bigg/\left(18\times 3^{1/4}\,b^2\sqrt{-\frac{b^{1/3}\,(c\,x)^{2/3}\left(c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)}{\left(a+b\,x^2\right)^{1/3}\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\right)$$

Result (type 5, 87 leaves):

$$\frac{1}{9 b^2 \left(a+b x^2\right)^{2/3}} c^3 (c x)^{1/3} \left(-7 a^2-4 a b x^2+3 b^2 x^4+7 a^2 \left(1+\frac{b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{2}{3},\frac{7}{6},-\frac{b x^2}{a}\right]\right)$$

Problem 780: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 66 leaves):

$$\frac{1}{b \left(a+b x^2\right)^{2/3}} c (c x)^{1/3} \left(a+b x^2-a \left(1+\frac{b x^2}{a}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{2}{3},\frac{7}{6},-\frac{b x^2}{a}\right]\right)$$

Problem 781: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 364 leaves, 3 steps):

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

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

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

Result (type 5, 55 leaves) :

$$\frac{3\,x\,\left(\frac{a+b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{6},\ \frac{2}{3},\ \frac{7}{6},\ -\frac{b\,x^2}{a}\right]}{(c\,x)^{2/3}\,\left(a+b\,x^2\right)^{2/3}}$$

Problem 782: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(c\,x)^{8/3}\,\left(a+b\,x^2\right)^{2/3}}\,dx$$

Optimal (type 4, 394 leaves, 4 steps) :

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

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

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

$$\left(10\,a^2\,c^{11/3}\,\sqrt{-\frac{b^{1/3}\,(c\,x)^{2/3}\,\left(c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)}{\left(a+b\,x^2\right)^{1/3}\,\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\right)$$

Result (type 5, 72 leaves):

$$-\frac{3\,x\,\left(a+b\,x^2+3\,b\,x^2\,\left(1+\frac{b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{6},\,\frac{2}{3},\,\frac{7}{6},\,-\frac{b\,x^2}{a}\right]\right)}{5\,a\,(c\,x)^{8/3}\,\left(a+b\,x^2\right)^{2/3}}$$

Problem 783: Result unnecessarily involves higher level functions.

$$\int\frac{1}{(c\,x)^{14/3}\,\left(a+b\,x^2\right)^{2/3}}\,dx$$

Optimal (type 4, 425 leaves, 5 steps):

$$-\frac{3\,\left(a+b\,x^2\right)^{1/3}}{11\,a\,c\,(c\,x)^{11/3}}+\frac{27\,b\,\left(a+b\,x^2\right)^{1/3}}{55\,a^2\,c^3\,(c\,x)^{5/3}}+$$
$$\left(27\times 3^{3/4}\,b^2\,(c\,x)^{1/3}\,\left(a+b\,x^2\right)^{1/3}\,\left(c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)\sqrt{\frac{c^{4/3}+\frac{b^{2/3}\,(c\,x)^{4/3}}{\left(a+b\,x^2\right)^{2/3}}+\frac{b^{1/3}\,c^{2/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\right.$$
$$\left.\text{EllipticF}\left[\text{ArcCos}\left[\frac{c^{2/3}-\frac{\left(1-\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}{c^{2/3}-\frac{\left(1+\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}}\right],\,\frac{1}{4}\,\left(2+\sqrt{3}\right)\right]\right)\Bigg/$$
$$\left(110\,a^3\,c^{17/3}\,\sqrt{-\frac{b^{1/3}\,(c\,x)^{2/3}\,\left(c^{2/3}-\frac{b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)}{\left(a+b\,x^2\right)^{1/3}\,\left(c^{2/3}-\frac{\left(1+\sqrt{3}\right)\,b^{1/3}\,(c\,x)^{2/3}}{\left(a+b\,x^2\right)^{1/3}}\right)^2}}\right)$$

Result (type 5, 93 leaves):

$$\left(3\,(c\,x)^{1/3}\,\left(-5\,a^2+4\,a\,b\,x^2+9\,b^2\,x^4+27\,b^2\,x^4\,\left(1+\frac{b\,x^2}{a}\right)^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{6},\,\frac{2}{3},\,\frac{7}{6},\,-\frac{b\,x^2}{a}\right]\right)\right)\Big/$$
$$\left(55\,a^2\,c^5\,x^4\,\left(a+b\,x^2\right)^{2/3}\right)$$

Problem 787: Result unnecessarily involves higher level functions.

$$\int x^4\,\left(a+b\,x^2\right)^{1/4}\,dx$$

Optimal (type 4, 121 leaves, 5 steps):

$$-\frac{4 a^2 x \left(a+b x^2\right)^{1/4}}{77 b^2}+\frac{2 a x^3 \left(a+b x^2\right)^{1/4}}{77 b}+\frac{2}{11} x^5 \left(a+b x^2\right)^{1/4}+\frac{8 a^{7/2} \left(1+\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{77 b^{5/2} \left(a+b x^2\right)^{3/4}}$$

Result (type 5, 89 leaves):

$$\frac{1}{77 b^2 \left(a+b x^2\right)^{3/4}} 2 x \left(-2 a^3-a^2 b x^2+8 a b^2 x^4+7 b^3 x^6+2 a^3 \left(1+\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b x^2}{a}\right]\right)$$

Problem 788: Result unnecessarily involves higher level functions.

$$\int x^2 \left(a+b x^2\right)^{1/4} \, dx$$

Optimal (type 4, 97 leaves, 4 steps):

$$\frac{2 a x \left(a+b x^2\right)^{1/4}}{21 b}+\frac{2}{7} x^3 \left(a+b x^2\right)^{1/4}-\frac{4 a^{5/2} \left(1+\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{21 b^{3/2} \left(a+b x^2\right)^{3/4}}$$

Result (type 5, 76 leaves):

$$\frac{1}{21 b \left(a+b x^2\right)^{3/4}} 2 x \left(a^2+4 a b x^2+3 b^2 x^4-a^2 \left(1+\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b x^2}{a}\right]\right)$$

Problem 789: Result unnecessarily involves higher level functions.

$$\int \left(a+b x^2\right)^{1/4} \, dx$$

Optimal (type 4, 75 leaves, 3 steps):

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

Result (type 5, 62 leaves):

$$\frac{2 x \left(a+b x^2\right)+a x \left(1+\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b x^2}{a}\right]}{3 \left(a+b x^2\right)^{3/4}}$$

Problem 790: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{1/4}}{x^2} \, dx$$

Optimal (type 4, 72 leaves, 3 steps):

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

Result (type 5, 68 leaves):

$$-\frac{\left(a+b x^2\right)^{1/4}}{x}+\frac{b\,x\,\left(\frac{a+b x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b x^2}{a}\right]}{2\,\left(a+b x^2\right)^{3/4}}$$

Problem 791: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{1/4}}{x^4}\,dx$$

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

$$-\frac{\left(a+b x^2\right)^{1/4}}{3 x^3}-\frac{b\,\left(a+b x^2\right)^{1/4}}{6 a x}-\frac{b^{3/2}\,\left(1+\frac{b x^2}{a}\right)^{3/4}\,\text{EllipticF}\left[\frac{1}{2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],2\right]}{6\,\sqrt{a}\,\left(a+b x^2\right)^{3/4}}$$

Result (type 5, 85 leaves):

$$\left(-2\,\left(2 a^2+3 a b x^2+b^2 x^4\right)-b^2 x^4\,\left(1+\frac{b x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\Big/\left(12\,a\,x^3\,\left(a+b x^2\right)^{3/4}\right)$$

Problem 792: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{1/4}}{x^6}\,dx$$

Optimal (type 4, 123 leaves, 5 steps):

$$-\frac{\left(a+b x^2\right)^{1/4}}{5 x^5}-\frac{b\,\left(a+b x^2\right)^{1/4}}{30 a x^3}+\frac{b^2\,\left(a+b x^2\right)^{1/4}}{12 a^2 x}+\frac{b^{5/2}\,\left(1+\frac{b x^2}{a}\right)^{3/4}\,\text{EllipticF}\left[\frac{1}{2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],2\right]}{12\,a^{3/2}\,\left(a+b x^2\right)^{3/4}}$$

Result (type 5, 94 leaves):

$$\left(-24 a^3-28 a^2 b x^2+6 a b^2 x^4+10 b^3 x^6+5 b^3 x^6\,\left(1+\frac{b x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\Big/\left(120\,a^2\,x^5\,\left(a+b x^2\right)^{3/4}\right)$$

Problem 793: Result unnecessarily involves higher level functions.

$$\int x^4\,\left(a-b x^2\right)^{1/4}\,dx$$

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

$$-\frac{4 a^2 x \left(a-b x^2\right)^{1/4}}{77 b^2}-\frac{2 a x^3 \left(a-b x^2\right)^{1/4}}{77 b}+\frac{2}{11} x^5 \left(a-b x^2\right)^{1/4}+\frac{8 a^{7/2} \left(1-\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{77 b^{5/2} \left(a-b x^2\right)^{3/4}}$$

Result (type 5, 89 leaves):

$$\frac{1}{77 b^2 \left(a-b x^2\right)^{3/4}} 2 x \left(-2 a^3+a^2 b x^2+8 a b^2 x^4-7 b^3 x^6+2 a^3 \left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b x^2}{a}\right]\right)$$

Problem 794: Result unnecessarily involves higher level functions.

$$\int x^2 \left(a-b x^2\right)^{1/4} dx$$

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

$$-\frac{2 a x \left(a-b x^2\right)^{1/4}}{21 b}+\frac{2}{7} x^3 \left(a-b x^2\right)^{1/4}+\frac{4 a^{5/2} \left(1-\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{21 b^{3/2} \left(a-b x^2\right)^{3/4}}$$

Result (type 5, 79 leaves):

$$\frac{1}{21 b \left(a-b x^2\right)^{3/4}} 2 \left(-a^2 x+4 a b x^3-3 b^2 x^5+a^2 x \left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b x^2}{a}\right]\right)$$

Problem 795: Result unnecessarily involves higher level functions.

$$\int \left(a-b x^2\right)^{1/4} dx$$

Optimal (type 4, 78 leaves, 3 steps):

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

Result (type 5, 63 leaves):

$$\frac{2 a x-2 b x^3+a x \left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b x^2}{a}\right]}{3 \left(a-b x^2\right)^{3/4}}$$

Problem 796: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a-b x^2\right)^{1/4}}{x^2} dx$$

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

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

Result (type 5, 70 leaves):

$$-\frac{\left(a-b x^2\right)^{1/4}}{x}-\frac{b x \left(\frac{a-b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b x^2}{a}\right]}{2 \left(a-b x^2\right)^{3/4}}$$

Problem 797: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a-b x^2\right)^{1/4}}{x^4} \, dx$$

Optimal (type 4, 103 leaves, 4 steps):

$$-\frac{\left(a-b x^2\right)^{1/4}}{3 x^3}+\frac{b \left(a-b x^2\right)^{1/4}}{6 a x}-\frac{b^{3/2} \left(1-\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b}\ x}{\sqrt{a}}\right],2\right]}{6 \sqrt{a}\ \left(a-b x^2\right)^{3/4}}$$

Result (type 5, 84 leaves):

$$\left(-4 a^2+6 a b x^2-2 b^2 x^4-b^2 x^4 \left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b x^2}{a}\right]\right) \Big/ \left(12 a x^3 \left(a-b x^2\right)^{3/4}\right)$$

Problem 798: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a-b x^2\right)^{1/4}}{x^6} \, dx$$

Optimal (type 4, 128 leaves, 5 steps):

$$-\frac{\left(a-b x^2\right)^{1/4}}{5 x^5}+\frac{b \left(a-b x^2\right)^{1/4}}{30 a x^3}+\frac{b^2 \left(a-b x^2\right)^{1/4}}{12 a^2 x}-\frac{b^{5/2} \left(1-\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b}\ x}{\sqrt{a}}\right],2\right]}{12 a^{3/2} \left(a-b x^2\right)^{3/4}}$$

Result (type 5, 95 leaves):

$$\left(-24 a^3+28 a^2 b x^2+6 a b^2 x^4-10 b^3 x^6-5 b^3 x^6 \left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b x^2}{a}\right]\right) \Big/ \left(120 a^2 x^5 \left(a-b x^2\right)^{3/4}\right)$$

Problem 799: Result unnecessarily involves higher level functions.

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

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

$$\frac{8 a^3 x}{65 b^2 \left(a+b x^2\right)^{1/4}}-\frac{4 a^2 x \left(a+b x^2\right)^{3/4}}{65 b^2}+\frac{2 a x^3 \left(a+b x^2\right)^{3/4}}{39 b}+\frac{2}{13} x^5 \left(a+b x^2\right)^{3/4}-\frac{8 a^{7/2} \left(1+\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right],2\right]}{65 b^{5/2} \left(a+b x^2\right)^{1/4}}$$

Result (type 5, 89 leaves):

$$\left(2 x \left(-6 a^3-a^2 b x^2+20 a b^2 x^4+15 b^3 x^6+6 a^3 \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\right)\Big/\left(195 b^2 \left(a+b x^2\right)^{1/4}\right)$$

Problem 800: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 119 leaves, 5 steps):

$$-\frac{4 a^2 x}{15 b \left(a+b x^2\right)^{1/4}}+\frac{2 a x \left(a+b x^2\right)^{3/4}}{15 b}+\frac{2}{9} x^3 \left(a+b x^2\right)^{3/4}+\frac{4 a^{5/2} \left(1+\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right],2\right]}{15 b^{3/2} \left(a+b x^2\right)^{1/4}}$$

Result (type 5, 78 leaves):

$$\frac{1}{45 b \left(a+b x^2\right)^{1/4}} 2 x \left(3 a^2+8 a b x^2+5 b^2 x^4-3 a^2 \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)$$

Problem 801: Result unnecessarily involves higher level functions.

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

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

$$\frac{6 a x}{5 \left(a+b x^2\right)^{1/4}}+\frac{2}{5} x \left(a+b x^2\right)^{3/4}-\frac{6 a^{3/2} \left(1+\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right],2\right]}{5 \sqrt{b} \left(a+b x^2\right)^{1/4}}$$

Result (type 5, 63 leaves):

$$\frac{2 x \left(a+b x^2\right)+3 a x \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]}{5 \left(a+b x^2\right)^{1/4}}$$

Problem 802: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 68 leaves):

$$-\frac{\left(a+b x^2\right)^{3/4}}{x}+\frac{3 b x \left(\frac{a+b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{1}{2}, \frac{3}{2}, -\frac{b x^2}{a}\right]}{2 \left(a+b x^2\right)^{1/4}}$$

Problem 803: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 121 leaves, 5 steps):

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

Result (type 5, 88 leaves):

$$\left(-\frac{1}{3 x^3}-\frac{b}{2 a x}\right) \left(a+b x^2\right)^{3/4}+\frac{b^2 x \left(\frac{a+b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{1}{2}, \frac{3}{2}, -\frac{b x^2}{a}\right]}{4 a \left(a+b x^2\right)^{1/4}}$$

Problem 804: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{3/4}}{x^6} \, dx$$

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

$$-\frac{3 b^3 x}{20 a^2 \left(a+b x^2\right)^{1/4}}-\frac{\left(a+b x^2\right)^{3/4}}{5 x^5}-\frac{b \left(a+b x^2\right)^{3/4}}{10 a x^3}+$$
$$\frac{3 b^2 \left(a+b x^2\right)^{3/4}}{20 a^2 x}+\frac{3 b^{5/2} \left(1+\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right], 2\right]}{20 a^{3/2} \left(a+b x^2\right)^{1/4}}$$

Result (type 5, 94 leaves):

$$\left(-8 a^3-12 a^2 b x^2+2 a b^2 x^4+6 b^3 x^6-3 b^3 x^6 \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right) \Big/ \left(40 a^2 x^5 \left(a+b x^2\right)^{1/4}\right)$$

Problem 805: Result unnecessarily involves higher level functions.

$$\int x^4 \left(a-b x^2\right)^{3/4} dx$$

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

$$-\frac{4 a^2 x \left(a-b x^2\right)^{3/4}}{65 b^2}-\frac{2 a x^3 \left(a-b x^2\right)^{3/4}}{39 b}+\frac{2}{13} x^5 \left(a-b x^2\right)^{3/4}+\frac{8 a^{7/2} \left(1-\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right],2\right]}{65 b^{5/2} \left(a-b x^2\right)^{1/4}}$$

Result (type 5, 89 leaves):

$$\left(2 x \left(-6 a^3+a^2 b x^2+20 a b^2 x^4-15 b^3 x^6+6 a^3 \left(1-\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b x^2}{a}\right]\right)\right) \Big/ \left(195 b^2 \left(a-b x^2\right)^{1/4}\right)$$

Problem 806: Result unnecessarily involves higher level functions.

$$\int x^2 \left(a-b x^2\right)^{3/4} dx$$

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

$$-\frac{2 a x \left(a-b x^2\right)^{3/4}}{15 b}+\frac{2}{9} x^3 \left(a-b x^2\right)^{3/4}+\frac{4 a^{5/2} \left(1-\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right],2\right]}{15 b^{3/2} \left(a-b x^2\right)^{1/4}}$$

Result (type 5, 80 leaves):

$$\frac{1}{45 b \left(a-b x^2\right)^{1/4}} 2 \left(-3 a^2 x+8 a b x^3-5 b^2 x^5+3 a^2 x \left(1-\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b x^2}{a}\right]\right)$$

Problem 807: Result unnecessarily involves higher level functions.

$$\int \left(a-b x^2\right)^{3/4} dx$$

Optimal (type 4, 78 leaves, 3 steps):

$$\frac{2}{5} x \left(a-b x^2\right)^{3/4}+\frac{6 a^{3/2} \left(1-\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{5 \sqrt{b} \left(a-b x^2\right)^{1/4}}$$

Result (type 5, 64 leaves):

$$\frac{2 a x-2 b x^3+3 a x \left(1-\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b x^2}{a}\right]}{5 \left(a-b x^2\right)^{1/4}}$$

Problem 808: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 70 leaves):

$$-\frac{\left(a-b x^2\right)^{3/4}}{x}-\frac{3 b x \left(\frac{a-b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b x^2}{a}\right]}{2 \left(a-b x^2\right)^{1/4}}$$

Problem 809: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 103 leaves, 4 steps):

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

Result (type 5, 84 leaves):

$$\left(-4 a^2+10 a b x^2-6 b^2 x^4+3 b^2 x^4 \left(1-\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b x^2}{a}\right]\right) \Big/ \left(12 a x^3 \left(a-b x^2\right)^{1/4}\right)$$

Problem 810: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a-b x^2\right)^{3/4}}{x^6} \, dx$$

Optimal (type 4, 128 leaves, 5 steps):

$$-\frac{\left(a-b x^2\right)^{3/4}}{5 x^5}+\frac{b \left(a-b x^2\right)^{3/4}}{10 a x^3}+\frac{3 b^2 \left(a-b x^2\right)^{3/4}}{20 a^2 x}+\frac{3 b^{5/2} \left(1-\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{20 a^{3/2} \left(a-b x^2\right)^{1/4}}$$

Result (type 5, 95 leaves):

$$\left(-8 a^3+12 a^2 b x^2+2 a b^2 x^4-6 b^3 x^6+3 b^3 x^6 \left(1-\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b x^2}{a}\right]\right) \Big/ \left(40 a^2 x^5 \left(a-b x^2\right)^{1/4}\right)$$

Problem 811: Result unnecessarily involves higher level functions.

$$\int \left(a+b x^2\right)^{5/4} \, dx$$

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

$$\frac{10}{21} a x \left(a+b x^2\right)^{1/4}+\frac{2}{7} x \left(a+b x^2\right)^{5/4}+\frac{10 a^{5/2} \left(1+\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{21 \sqrt{b} \left(a+b x^2\right)^{3/4}}$$

Result (type 5, 76 leaves):

$$\frac{1}{21 \left(a+b x^2\right)^{3/4}} \left(16 a^2 x+22 a b x^3+6 b^2 x^5+5 a^2 x \left(1+\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b x^2}{a}\right]\right)$$

Problem 812: Result unnecessarily involves higher level functions.

$$\int \left(a-b x^2\right)^{5/4} \, dx$$

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

$$\frac{10}{21} a x \left(a-b x^2\right)^{1/4}+\frac{2}{7} x \left(a-b x^2\right)^{5/4}+\frac{10 a^{5/2} \left(1-\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{21 \sqrt{b} \left(a-b x^2\right)^{3/4}}$$

Result (type 5, 77 leaves):

$$\frac{1}{21 \left(a-b x^2\right)^{3/4}} \left(16 a^2 x-22 a b x^3+6 b^2 x^5+5 a^2 x \left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b x^2}{a}\right]\right)$$

Problem 813: Result unnecessarily involves higher level functions.

$$\int \left(a+b x^2\right)^{7/4} \, dx$$

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

$$\frac{14 a^2 x}{15 \left(a+b x^2\right)^{1/4}}+\frac{14}{45} a x \left(a+b x^2\right)^{3/4}+\frac{2}{9} x \left(a+b x^2\right)^{7/4}-\frac{14 a^{5/2} \left(1+\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{15 \sqrt{b} \left(a+b x^2\right)^{1/4}}$$

Result (type 5, 76 leaves):

$$\frac{1}{45 \left(a+b x^2\right)^{1/4}} \left(24 a^2 x+34 a b x^3+10 b^2 x^5+21 a^2 x \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)$$

Problem 814: Result unnecessarily involves higher level functions.

$$\int \left(a-b x^2\right)^{7/4} dx$$

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

$$\frac{14}{45} a x \left(a-b x^2\right)^{3/4}+\frac{2}{9} x \left(a-b x^2\right)^{7/4}+\frac{14 a^{5/2} \left(1-\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{15 \sqrt{b} \left(a-b x^2\right)^{1/4}}$$

Result (type 5, 77 leaves):

$$\frac{1}{45 \left(a-b x^2\right)^{1/4}} \left(24 a^2 x-34 a b x^3+10 b^2 x^5+21 a^2 x \left(1-\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b x^2}{a}\right]\right)$$

Problem 815: Result unnecessarily involves higher level functions.

$$\int \frac{x^6}{\left(a+b x^2\right)^{1/4}} dx$$

Optimal (type 4, 146 leaves, 6 steps):

$$-\frac{16 a^3 x}{39 b^3 \left(a+b x^2\right)^{1/4}}+\frac{8 a^2 x \left(a+b x^2\right)^{3/4}}{39 b^3}-\frac{20 a x^3 \left(a+b x^2\right)^{3/4}}{117 b^2}+\frac{2 x^5 \left(a+b x^2\right)^{3/4}}{13 b}+\frac{16 a^{7/2} \left(1+\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{39 b^{7/2} \left(a+b x^2\right)^{1/4}}$$

Result (type 5, 90 leaves):

$$\left(2\left(12\,a^3\,x+2\,a^2\,b\,x^3-a\,b^2\,x^5+9\,b^3\,x^7-12\,a^3\,x\left(1+\frac{b\,x^2}{a}\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b\,x^2}{a}\right]\right)\right)\Big/\left(117\,b^3\left(a+b\,x^2\right)^{1/4}\right)$$

Problem 816: Result unnecessarily involves higher level functions.

$$\int\frac{x^4}{\left(a+b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 122 leaves, 5 steps):

$$\frac{8\,a^2\,x}{15\,b^2\left(a+b\,x^2\right)^{1/4}}-\frac{4\,a\,x\left(a+b\,x^2\right)^{3/4}}{15\,b^2}+\frac{2\,x^3\left(a+b\,x^2\right)^{3/4}}{9\,b}-\frac{8\,a^{5/2}\left(1+\frac{b\,x^2}{a}\right)^{1/4}\text{EllipticE}\left[\frac{1}{2}\text{ArcTan}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],2\right]}{15\,b^{5/2}\left(a+b\,x^2\right)^{1/4}}$$

Result (type 5, 79 leaves):

$$\frac{1}{45\,b^2\left(a+b\,x^2\right)^{1/4}}2\left(-6\,a^2\,x-a\,b\,x^3+5\,b^2\,x^5+6\,a^2\,x\left(1+\frac{b\,x^2}{a}\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b\,x^2}{a}\right]\right)$$

Problem 817: Result unnecessarily involves higher level functions.

$$\int\frac{x^2}{\left(a+b\,x^2\right)^{1/4}}\,dx$$

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

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

Result (type 5, 62 leaves):

$$\frac{2\,x\left(a+b\,x^2-a\left(1+\frac{b\,x^2}{a}\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b\,x^2}{a}\right]\right)}{5\,b\left(a+b\,x^2\right)^{1/4}}$$

Problem 818: Result unnecessarily involves higher level functions.

$$\int\frac{1}{\left(a+b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 71 leaves, 3 steps):

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

Result (type 5, 47 leaves):

$$\frac{x\,\left(\frac{a+b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{1}{2},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]}{\left(a+b\,x^2\right)^{1/4}}$$

Problem 819: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^2\,\left(a+b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 93 leaves, 4 steps):

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

Result (type 5, 69 leaves):

$$\frac{-2\,\left(a+b\,x^2\right)+b\,x^2\,\left(1+\frac{b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{1}{2},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]}{2\,a\,x\,\left(a+b\,x^2\right)^{1/4}}$$

Problem 820: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^4\,\left(a+b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 124 leaves, 5 steps):

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

Result (type 5, 83 leaves):

$$\left(-4\,a^2+2\,a\,b\,x^2+6\,b^2\,x^4-3\,b^2\,x^4\,\left(1+\frac{b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{1}{2},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]\right)\Big/\left(12\,a^2\,x^3\,\left(a+b\,x^2\right)^{1/4}\right)$$

Problem 821: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^6\,\left(a+b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 148 leaves, 6 steps):

$$\frac{7 b^3 x}{20 a^3 \left(a+b x^2\right)^{1/4}}-\frac{\left(a+b x^2\right)^{3/4}}{5 a x^5}+\frac{7 b \left(a+b x^2\right)^{3/4}}{30 a^2 x^3}-\frac{7 b^2 \left(a+b x^2\right)^{3/4}}{20 a^3 x}-\frac{7 b^{5/2} \left(1+\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{20 a^{5/2} \left(a+b x^2\right)^{1/4}}$$

Result (type 5, 94 leaves) :

$$\left(-24 a^3+4 a^2 b x^2-14 a b^2 x^4-42 b^3 x^6+21 b^3 x^6 \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\Big/\left(120 a^3 x^5 \left(a+b x^2\right)^{1/4}\right)$$

Problem 822: Result unnecessarily involves higher level functions.

$$\int \frac{x^6}{\left(a-b x^2\right)^{1/4}} \, dx$$

Optimal (type 4, 129 leaves, 5 steps) :

$$-\frac{8 a^2 x \left(a-b x^2\right)^{3/4}}{39 b^3}-\frac{20 a x^3 \left(a-b x^2\right)^{3/4}}{117 b^2}-\frac{2 x^5 \left(a-b x^2\right)^{3/4}}{13 b}+\frac{16 a^{7/2} \left(1-\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{39 b^{7/2} \left(a-b x^2\right)^{1/4}}$$

Result (type 5, 89 leaves) :

$$\left(2 x \left(-12 a^3+2 a^2 b x^2+a b^2 x^4+9 b^3 x^6+12 a^3 \left(1-\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b x^2}{a}\right]\right)\right)\Big/\left(117 b^3 \left(a-b x^2\right)^{1/4}\right)$$

Problem 823: Result unnecessarily involves higher level functions.

$$\int \frac{x^4}{\left(a-b x^2\right)^{1/4}} \, dx$$

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

$$-\frac{4 a x \left(a-b x^2\right)^{3/4}}{15 b^2}-\frac{2 x^3 \left(a-b x^2\right)^{3/4}}{9 b}+\frac{8 a^{5/2} \left(1-\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{15 b^{5/2} \left(a-b x^2\right)^{1/4}}$$

Result (type 5, 79 leaves) :

$$\frac{1}{45\,b^2\,\left(a-b\,x^2\right)^{1/4}}$$

$$2\left(-6\,a^2\,x+a\,b\,x^3+5\,b^2\,x^5+6\,a^2\,x\,\left(1-\frac{b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{1}{2},\,\frac{3}{2},\,\frac{b\,x^2}{a}\right]\right)$$

Problem 824: Result unnecessarily involves higher level functions.

$$\int\frac{x^2}{\left(a-b\,x^2\right)^{1/4}}\,dx$$

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

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

Result (type 5, 64 leaves):

$$\frac{2\,x\,\left(-a+b\,x^2+a\,\left(1-\frac{b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{1}{2},\,\frac{3}{2},\,\frac{b\,x^2}{a}\right]\right)}{5\,b\,\left(a-b\,x^2\right)^{1/4}}$$

Problem 825: Result unnecessarily involves higher level functions.

$$\int\frac{1}{\left(a-b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 58 leaves, 2 steps):

$$\frac{2\,\sqrt{a}\,\left(1-\frac{b\,x^2}{a}\right)^{1/4}\,\text{EllipticE}\left[\frac{1}{2}\,\text{ArcSin}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],\,2\right]}{\sqrt{b}\,\left(a-b\,x^2\right)^{1/4}}$$

Result (type 5, 48 leaves):

$$\frac{x\,\left(\frac{a-b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{1}{2},\,\frac{3}{2},\,\frac{b\,x^2}{a}\right]}{\left(a-b\,x^2\right)^{1/4}}$$

Problem 826: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^2\,\left(a-b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 79 leaves, 3 steps):

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

Result (type 5, 71 leaves):

$$\frac{-2\,a+2\,b\,x^2-b\,x^2\left(1-\frac{b\,x^2}{a}\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b\,x^2}{a}\right]}{2\,a\,x\left(a-b\,x^2\right)^{1/4}}$$

Problem 827: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^4\left(a-b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 106 leaves, 4 steps):

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

Result (type 5, 84 leaves):

$$\left(-4\,a^2-2\,a\,b\,x^2+6\,b^2\,x^4-3\,b^2\,x^4\left(1-\frac{b\,x^2}{a}\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b\,x^2}{a}\right]\right)\Big/\left(12\,a^2\,x^3\left(a-b\,x^2\right)^{1/4}\right)$$

Problem 828: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^6\left(a-b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 131 leaves, 5 steps):

$$-\frac{\left(a-b\,x^2\right)^{3/4}}{5\,a\,x^5}-\frac{7\,b\left(a-b\,x^2\right)^{3/4}}{30\,a^2\,x^3}-\frac{7\,b^2\left(a-b\,x^2\right)^{3/4}}{20\,a^3\,x}-\frac{7\,b^{5/2}\left(1-\frac{b\,x^2}{a}\right)^{1/4}\text{EllipticE}\left[\frac{1}{2}\text{ArcSin}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],2\right]}{20\,a^{5/2}\left(a-b\,x^2\right)^{1/4}}$$

Result (type 5, 95 leaves):

$$\left(-24\,a^3-4\,a^2\,b\,x^2-14\,a\,b^2\,x^4+42\,b^3\,x^6-21\,b^3\,x^6\left(1-\frac{b\,x^2}{a}\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b\,x^2}{a}\right]\right)\Big/\left(120\,a^3\,x^5\left(a-b\,x^2\right)^{1/4}\right)$$

Problem 829: Result unnecessarily involves higher level functions.

$$\int\frac{x^6}{\left(a+b\,x^2\right)^{3/4}}\,dx$$

Optimal (type 4, 124 leaves, 5 steps):

$$\frac{40 a^2 x \left(a+b x^2\right)^{1/4}}{77 b^3}-\frac{20 a x^3 \left(a+b x^2\right)^{1/4}}{77 b^2}+\frac{2 x^5 \left(a+b x^2\right)^{1/4}}{11 b}-\frac{80 a^{7/2} \left(1+\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right],2\right]}{77 b^{7/2} \left(a+b x^2\right)^{3/4}}$$

Result (type 5, 90 leaves):

$$\frac{1}{77 b^3 \left(a+b x^2\right)^{3/4}} 2 \left(20 a^3 x+10 a^2 b x^3-3 a b^2 x^5+7 b^3 x^7-20 a^3 x \left(1+\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b x^2}{a}\right]\right)$$

Problem 830: Result unnecessarily involves higher level functions.

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

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

$$-\frac{4 a x \left(a+b x^2\right)^{1/4}}{7 b^2}+\frac{2 x^3 \left(a+b x^2\right)^{1/4}}{7 b}+\frac{8 a^{5/2} \left(1+\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right],2\right]}{7 b^{5/2} \left(a+b x^2\right)^{3/4}}$$

Result (type 5, 78 leaves):

$$\frac{1}{7 b^2 \left(a+b x^2\right)^{3/4}} 2 \left(-2 a^2 x-a b x^3+b^2 x^5+2 a^2 x \left(1+\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b x^2}{a}\right]\right)$$

Problem 831: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 78 leaves, 3 steps):

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

Result (type 5, 62 leaves):

$$\frac{2 x \left(a+b x^2-a \left(1+\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b x^2}{a}\right]\right)}{3 b \left(a+b x^2\right)^{3/4}}$$

Problem 832: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(a+b\,x^2\right)^{3/4}}\,dx$$

Optimal (type 4, 56 leaves, 2 steps):

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

Result (type 5, 47 leaves):

$$\frac{x\,\left(\frac{a+b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b\,x^2}{a}\right]}{\left(a+b\,x^2\right)^{3/4}}$$

Problem 833: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^2\,\left(a+b\,x^2\right)^{3/4}}\,dx$$

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

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

Result (type 5, 70 leaves):

$$\frac{-2\,\left(a+b\,x^2\right)-b\,x^2\,\left(1+\frac{b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b\,x^2}{a}\right]}{2\,a\,x\,\left(a+b\,x^2\right)^{3/4}}$$

Problem 834: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^4\,\left(a+b\,x^2\right)^{3/4}}\,dx$$

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

$$-\frac{\left(a+b\,x^2\right)^{1/4}}{3\,a\,x^3}+\frac{5\,b\,\left(a+b\,x^2\right)^{1/4}}{6\,a^2\,x}+\frac{5\,b^{3/2}\,\left(1+\frac{b\,x^2}{a}\right)^{3/4}\,\text{EllipticF}\left[\frac{1}{2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],2\right]}{6\,a^{3/2}\,\left(a+b\,x^2\right)^{3/4}}$$

Result (type 5, 83 leaves):

$$\left(-4\,a^2+6\,a\,b\,x^2+10\,b^2\,x^4+5\,b^2\,x^4\,\left(1+\frac{b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b\,x^2}{a}\right]\right)\Big/\left(12\,a^2\,x^3\,\left(a+b\,x^2\right)^{3/4}\right)$$

Problem 835: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^6 \left(a+b x^2\right)^{3/4}} \, dx$$

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

$$-\frac{\left(a+b x^2\right)^{1/4}}{5 a x^5}+\frac{3 b \left(a+b x^2\right)^{1/4}}{10 a^2 x^3}-\frac{3 b^2 \left(a+b x^2\right)^{1/4}}{4 a^3 x}-\frac{3 b^{5/2} \left(1+\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{4 a^{5/2} \left(a+b x^2\right)^{3/4}}$$

Result (type 5, 94 leaves):

$$\left(-8 a^3+4 a^2 b x^2-18 a b^2 x^4-30 b^3 x^6-15 b^3 x^6 \left(1+\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b x^2}{a}\right]\right) \Big/ \left(40 a^3 x^5 \left(a+b x^2\right)^{3/4}\right)$$

Problem 836: Result unnecessarily involves higher level functions.

$$\int \frac{x^6}{\left(a-b x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 129 leaves, 5 steps):

$$-\frac{40 a^2 x \left(a-b x^2\right)^{1/4}}{77 b^3}-\frac{20 a x^3 \left(a-b x^2\right)^{1/4}}{77 b^2}-\frac{2 x^5 \left(a-b x^2\right)^{1/4}}{11 b}+\frac{80 a^{7/2} \left(1-\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{77 b^{7/2} \left(a-b x^2\right)^{3/4}}$$

Result (type 5, 91 leaves):

$$\frac{1}{77 b^3 \left(a-b x^2\right)^{3/4}} 2 \left(-20 a^3 x+10 a^2 b x^3+3 a b^2 x^5+7 b^3 x^7+20 a^3 x \left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b x^2}{a}\right]\right)$$

Problem 837: Result unnecessarily involves higher level functions.

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

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

$$-\frac{4 a x \left(a-b x^2\right)^{1/4}}{7 b^2}-\frac{2 x^3 \left(a-b x^2\right)^{1/4}}{7 b}+\frac{8 a^{5/2} \left(1-\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{7 b^{5/2} \left(a-b x^2\right)^{3/4}}$$

Result (type 5, 77 leaves):

$$\frac{1}{7 b^2 \left(a-b x^2\right)^{3/4}}2 x \left(-2 a^2+a b x^2+b^2 x^4+2 a^2 \left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b x^2}{a}\right]\right)$$

Problem 838: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 64 leaves):

$$\frac{2 x \left(-a+b x^2+a \left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b x^2}{a}\right]\right)}{3 b \left(a-b x^2\right)^{3/4}}$$

Problem 839: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(a-b x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 58 leaves, 2 steps):

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

Result (type 5, 48 leaves):

$$\frac{x \left(\frac{a-b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b x^2}{a}\right]}{\left(a-b x^2\right)^{3/4}}$$

Problem 840: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^2 \left(a-b x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 78 leaves, 3 steps):

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

Result (type 5, 70 leaves):

$$\frac{-2 a+2 b x^2+b x^2\left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b x^2}{a}\right]}{2 a x\left(a-b x^2\right)^{3/4}}$$

Problem 841: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^4\left(a-b x^2\right)^{3/4}}\,dx$$

Optimal (type 4, 106 leaves, 4 steps):

$$-\frac{\left(a-b x^2\right)^{1/4}}{3 a x^3}-\frac{5 b\left(a-b x^2\right)^{1/4}}{6 a^2 x}+\frac{5 b^{3/2}\left(1-\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{6 a^{3/2}\left(a-b x^2\right)^{3/4}}$$

Result (type 5, 84 leaves):

$$\left(-4 a^2-6 a b x^2+10 b^2 x^4+5 b^2 x^4\left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b x^2}{a}\right]\right)\Big/\left(12 a^2 x^3\left(a-b x^2\right)^{3/4}\right)$$

Problem 842: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^6\left(a-b x^2\right)^{3/4}}\,dx$$

Optimal (type 4, 131 leaves, 5 steps):

$$-\frac{\left(a-b x^2\right)^{1/4}}{5 a x^5}-\frac{3 b\left(a-b x^2\right)^{1/4}}{10 a^2 x^3}-\frac{3 b^2\left(a-b x^2\right)^{1/4}}{4 a^3 x}+\frac{3 b^{5/2}\left(1-\frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{4 a^{5/2}\left(a-b x^2\right)^{3/4}}$$

Result (type 5, 95 leaves):

$$\left(-8 a^3-4 a^2 b x^2-18 a b^2 x^4+30 b^3 x^6+15 b^3 x^6\left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b x^2}{a}\right]\right)\Big/\left(40 a^3 x^5\left(a-b x^2\right)^{3/4}\right)$$

Problem 843: Result unnecessarily involves higher level functions.

$$\int \frac{x^6}{\left(a+b x^2\right)^{5/4}} \, dx$$

Optimal (type 4, 124 leaves, 5 steps):

$$\frac{8 a^2 x}{3 b^3 \left(a+b x^2\right)^{1/4}}-\frac{4 a x^3}{9 b^2 \left(a+b x^2\right)^{1/4}}+\frac{2 x^5}{9 b \left(a+b x^2\right)^{1/4}}-\frac{16 a^{5/2} \left(1+\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{3 b^{7/2} \left(a+b x^2\right)^{1/4}}$$

Result (type 5, 78 leaves):

$$\frac{1}{9 b^3 \left(a+b x^2\right)^{1/4}} 2 \left(-12 a^2 x-2 a b x^3+b^2 x^5+12 a^2 x \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)$$

Problem 844: Result unnecessarily involves higher level functions.

$$\int \frac{x^4}{\left(a+b x^2\right)^{5/4}} \, dx$$

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

$$-\frac{12 a x}{5 b^2 \left(a+b x^2\right)^{1/4}}+\frac{2 x^3}{5 b \left(a+b x^2\right)^{1/4}}+\frac{24 a^{3/2} \left(1+\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{5 b^{5/2} \left(a+b x^2\right)^{1/4}}$$

Result (type 5, 64 leaves):

$$\frac{2 x \left(6 a+b x^2-6 a \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)}{5 b^2 \left(a+b x^2\right)^{1/4}}$$

Problem 845: Result unnecessarily involves higher level functions.

$$\int \frac{x^2}{\left(a+b x^2\right)^{5/4}} \, dx$$

Optimal (type 4, 74 leaves, 3 steps):

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

Result (type 5, 53 leaves):

$$\frac{2 x \left(-1+\left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)}{b \left(a+b x^2\right)^{1/4}}$$

Problem 846: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(a+b x^2\right)^{5/4}} \, dx$$

Optimal (type 4, 56 leaves, 2 steps):

$$\frac{2 \left(1+\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{\sqrt{a} \sqrt{b} \left(a+b x^2\right)^{1/4}}$$

Result (type 5, 55 leaves):

$$\frac{2 x-x \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]}{a \left(a+b x^2\right)^{1/4}}$$

Problem 847: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^2 \left(a+b x^2\right)^{5/4}} \, dx$$

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

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

Result (type 5, 71 leaves):

$$\left(-2 \left(a+3 b x^2\right)+3 b x^2 \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right) \Big/ \left(2 a^2 x \left(a+b x^2\right)^{1/4}\right)$$

Problem 848: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^4 \left(a+b x^2\right)^{5/4}} \, dx$$

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

$$-\frac{1}{3 a x^3 \left(a+b x^2\right)^{1/4}}+\frac{7 b}{6 a^2 x \left(a+b x^2\right)^{1/4}}+\frac{7 b^{3/2} \left(1+\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{2 a^{5/2} \left(a+b x^2\right)^{1/4}}$$

Result (type 5, 83 leaves):

$$\left(-4 a^2+14 a b x^2+42 b^2 x^4-21 b^2 x^4 \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\Big/ \left(12 a^3 x^3 \left(a+b x^2\right)^{1/4}\right)$$

Problem 849: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^6 \left(a+b x^2\right)^{5/4}} \, dx$$

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

$$-\frac{1}{5 a x^5 \left(a+b x^2\right)^{1/4}}+\frac{11 b}{30 a^2 x^3 \left(a+b x^2\right)^{1/4}}-\frac{77 b^2}{60 a^3 x \left(a+b x^2\right)^{1/4}}-\frac{77 b^{5/2} \left(1+\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{20 a^{7/2} \left(a+b x^2\right)^{1/4}}$$

Result (type 5, 94 leaves):

$$\left(-24 a^3+44 a^2 b x^2-154 a b^2 x^4-462 b^3 x^6+231 b^3 x^6 \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\Big/ \left(120 a^4 x^5 \left(a+b x^2\right)^{1/4}\right)$$

Problem 850: Result unnecessarily involves higher level functions.

$$\int \frac{x^6}{\left(a-b x^2\right)^{5/4}} \, dx$$

Optimal (type 4, 124 leaves, 5 steps):

$$\frac{2 x^5}{b \left(a-b x^2\right)^{1/4}}+\frac{8 a x \left(a-b x^2\right)^{3/4}}{3 b^3}+\frac{20 x^3 \left(a-b x^2\right)^{3/4}}{9 b^2}-\frac{16 a^{5/2} \left(1-\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{3 b^{7/2} \left(a-b x^2\right)^{1/4}}$$

Result (type 5, 78 leaves):

$$-\frac{1}{9 b^3 \left(a-b x^2\right)^{1/4}} 2 x \left(-12 a^2+2 a b x^2+b^2 x^4+12 a^2 \left(1-\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b x^2}{a}\right]\right)$$

Problem 851: Result unnecessarily involves higher level functions.

$$\int \frac{x^4}{\left(a-b x^2\right)^{5/4}}\,dx$$

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

$$\frac{2 x^3}{b \left(a-b x^2\right)^{1/4}}+\frac{12 x \left(a-b x^2\right)^{3/4}}{5 b^2}-\frac{24 a^{3/2} \left(1-\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right],2\right]}{5 b^{5/2} \left(a-b x^2\right)^{1/4}}$$

Result (type 5, 65 leaves):

$$-\frac{2 x \left(-6 a+b x^2+6 a \left(1-\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b x^2}{a}\right]\right)}{5 b^2 \left(a-b x^2\right)^{1/4}}$$

Problem 852: Result unnecessarily involves higher level functions.

$$\int \frac{x^2}{\left(a-b x^2\right)^{5/4}}\,dx$$

Optimal (type 4, 77 leaves, 3 steps):

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

Result (type 5, 54 leaves):

$$-\frac{2 x \left(-1+\left(1-\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b x^2}{a}\right]\right)}{b \left(a-b x^2\right)^{1/4}}$$

Problem 853: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(a-b x^2\right)^{5/4}}\,dx$$

Optimal (type 4, 77 leaves, 3 steps):

$$\frac{2 x}{a \left(a-b x^2\right)^{1/4}}-\frac{2 \left(1-\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right],2\right]}{\sqrt{a}\, \sqrt{b} \left(a-b x^2\right)^{1/4}}$$

Result (type 5, 54 leaves):

$$-\frac{x \left(-2+\left(1-\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b x^2}{a}\right]\right)}{a \left(a-b x^2\right)^{1/4}}$$

Problem 854: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^2 \left(a-b x^2\right)^{5/4}} \, dx$$

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

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

Result (type 5, 71 leaves):

$$\frac{-2 a+6 b x^2-3 b x^2 \left(1-\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b x^2}{a}\right]}{2 a^2 x \left(a-b x^2\right)^{1/4}}$$

Problem 855: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^4 \left(a-b x^2\right)^{5/4}} \, dx$$

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

$$\frac{2}{a x^3 \left(a-b x^2\right)^{1/4}}-\frac{7 \left(a-b x^2\right)^{3/4}}{3 a^2 x^3}-\frac{7 b \left(a-b x^2\right)^{3/4}}{2 a^3 x}-\frac{7 b^{3/2} \left(1-\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{2 a^{5/2} \left(a-b x^2\right)^{1/4}}$$

Result (type 5, 84 leaves):

$$\left(-4 a^2-14 a b x^2+42 b^2 x^4-21 b^2 x^4 \left(1-\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b x^2}{a}\right]\right) \Big/ \left(12 a^3 x^3 \left(a-b x^2\right)^{1/4}\right)$$

Problem 856: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^6 \left(a-b x^2\right)^{5/4}} \, dx$$

Optimal (type 4, 151 leaves, 6 steps):

$$\frac{2}{a x^5 \left(a-b x^2\right)^{1/4}}-\frac{11 \left(a-b x^2\right)^{3/4}}{5 a^2 x^5}-\frac{77 b \left(a-b x^2\right)^{3/4}}{30 a^3 x^3}-\frac{77 b^2 \left(a-b x^2\right)^{3/4}}{20 a^4 x}-\frac{77 b^{5/2} \left(1-\frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{20 a^{7/2} \left(a-b x^2\right)^{1/4}}$$

Result (type 5, 95 leaves):

$$\left(-24 a^3 - 44 a^2 b x^2 - 154 a b^2 x^4 + 462 b^3 x^6 - 231 b^3 x^6 \left(1 - \frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{1}{2}, \frac{3}{2}, \frac{b x^2}{a}\right]\right) \Big/ \left(120 a^4 x^5 \left(a - b x^2\right)^{1/4}\right)$$

Problem 857: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(a + b x^2\right)^{7/4}} \, dx$$

Optimal (type 4, 78 leaves, 3 steps):

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

Result (type 5, 55 leaves):

$$\frac{x \left(2 + \left(1 + \frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{3}{2}, -\frac{b x^2}{a}\right]\right)}{3 a \left(a + b x^2\right)^{3/4}}$$

Problem 858: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(a + b x^2\right)^{9/4}} \, dx$$

Optimal (type 4, 78 leaves, 3 steps):

$$\frac{2 x}{5 a \left(a + b x^2\right)^{5/4}} + \frac{6 \left(1 + \frac{b x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right], 2\right]}{5 a^{3/2} \sqrt{b} \left(a + b x^2\right)^{1/4}}$$

Result (type 5, 72 leaves):

$$\frac{1}{5 a^2 \left(a + b x^2\right)^{5/4}} \left(8 a x + 6 b x^3 - 3 x \left(a + b x^2\right) \left(1 + \frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{1}{2}, \frac{3}{2}, -\frac{b x^2}{a}\right]\right)$$

Problem 859: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(a + b x^2\right)^{11/4}} \, dx$$

Optimal (type 4, 97 leaves, 4 steps):

$$\frac{2 x}{7 a \left(a + b x^2\right)^{7/4}} + \frac{10 x}{21 a^2 \left(a + b x^2\right)^{3/4}} + \frac{10 \left(1 + \frac{b x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right], 2\right]}{21 a^{3/2} \sqrt{b} \left(a + b x^2\right)^{3/4}}$$

Result (type 5, 75 leaves) :

$$\frac{1}{21\, a^2 \left(a+b\, x^2\right)^{7/4}} \left(2\, x \left(8\, a+5\, b\, x^2\right)+5\, x \left(a+b\, x^2\right) \left(1+\frac{b\, x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{b\, x^2}{a}\right]\right)$$

Problem 860: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(a-b\, x^2\right)^{7/4}}\, dx$$

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

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

Result (type 5, 56 leaves) :

$$\frac{x \left(2+\left(1-\frac{b\, x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{b\, x^2}{a}\right]\right)}{3\, a \left(a-b\, x^2\right)^{3/4}}$$

Problem 861: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(a-b\, x^2\right)^{9/4}}\, dx$$

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

$$\frac{2\, x}{5\, a \left(a-b\, x^2\right)^{5/4}}+\frac{6\, x}{5\, a^2 \left(a-b\, x^2\right)^{1/4}}-\frac{6 \left(1-\frac{b\, x^2}{a}\right)^{1/4} \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right],2\right]}{5\, a^{3/2} \sqrt{b} \left(a-b\, x^2\right)^{1/4}}$$

Result (type 5, 74 leaves) :

$$\frac{1}{5\, a^2 \left(a-b\, x^2\right)^{5/4}} \left(8\, a\, x-6\, b\, x^3-3\, x \left(a-b\, x^2\right) \left(1-\frac{b\, x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{b\, x^2}{a}\right]\right)$$

Problem 862: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(a-b\, x^2\right)^{11/4}}\, dx$$

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

$$\frac{2\, x}{7\, a \left(a-b\, x^2\right)^{7/4}}+\frac{10\, x}{21\, a^2 \left(a-b\, x^2\right)^{3/4}}+\frac{10 \left(1-\frac{b\, x^2}{a}\right)^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcSin}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right],2\right]}{21\, a^{3/2} \sqrt{b} \left(a-b\, x^2\right)^{3/4}}$$

Result (type 5, 77 leaves):

$$\frac{1}{21\,a^2\,\left(a-b\,x^2\right)^{7/4}}\left(2\,x\,\left(8\,a-5\,b\,x^2\right)+5\,x\,\left(a-b\,x^2\right)\,\left(1-\frac{b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{3}{2},\,\frac{b\,x^2}{a}\right]\right)$$

Problem 863: Result unnecessarily involves higher level functions.

$$\int\frac{x^6}{\left(2+3\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 99 leaves, 5 steps):

$$-\frac{128\,x}{1053\,\left(2+3\,x^2\right)^{1/4}}+\frac{32\,x\,\left(2+3\,x^2\right)^{3/4}}{1053}-\frac{40\,x^3\,\left(2+3\,x^2\right)^{3/4}}{1053}+\frac{2}{39}\,x^5\,\left(2+3\,x^2\right)^{3/4}+\frac{128\times2^{1/4}\,\text{EllipticE}\left[\frac{1}{2}\,\text{ArcTan}\left[\sqrt{\frac{3}{2}}\,x\right],\,2\right]}{1053\,\sqrt{3}}$$

Result (type 5, 54 leaves):

$$\frac{1}{1053}2\,x\,\left(\left(2+3\,x^2\right)^{3/4}\,\left(16-20\,x^2+27\,x^4\right)-16\times2^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{1}{2},\,\frac{3}{2},\,-\frac{3\,x^2}{2}\right]\right)$$

Problem 864: Result unnecessarily involves higher level functions.

$$\int\frac{x^4}{\left(2+3\,x^2\right)^{1/4}}\,dx$$

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

$$\frac{32\,x}{135\,\left(2+3\,x^2\right)^{1/4}}-\frac{8}{135}\,x\,\left(2+3\,x^2\right)^{3/4}+\frac{2}{27}\,x^3\,\left(2+3\,x^2\right)^{3/4}-\frac{32\times2^{1/4}\,\text{EllipticE}\left[\frac{1}{2}\,\text{ArcTan}\left[\sqrt{\frac{3}{2}}\,x\right],\,2\right]}{135\,\sqrt{3}}$$

Result (type 5, 49 leaves):

$$\frac{2}{135}\,x\,\left(\left(2+3\,x^2\right)^{3/4}\,\left(-4+5\,x^2\right)+4\times2^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{1}{2},\,\frac{3}{2},\,-\frac{3\,x^2}{2}\right]\right)$$

Problem 865: Result unnecessarily involves higher level functions.

$$\int\frac{x^2}{\left(2+3\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 63 leaves, 3 steps):

$$-\frac{8x}{15\left(2+3x^2\right)^{1/4}}+\frac{2}{15}x\left(2+3x^2\right)^{3/4}+\frac{8\times 2^{1/4}\,\text{EllipticE}\left[\frac{1}{2}\text{ArcTan}\left[\sqrt{\frac{3}{2}}\,x\right],2\right]}{15\sqrt{3}}$$

Result (type 5, 41 leaves):

$$\frac{2}{15}x\left(\left(2+3x^2\right)^{3/4}-2^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{3x^2}{2}\right]\right)$$

Problem 866: Result unnecessarily involves higher level functions.

$$\int\frac{1}{\left(2+3x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 43 leaves, 2 steps):

$$\frac{2x}{\left(2+3x^2\right)^{1/4}}-\frac{2\times 2^{1/4}\,\text{EllipticE}\left[\frac{1}{2}\text{ArcTan}\left[\sqrt{\frac{3}{2}}\,x\right],2\right]}{\sqrt{3}}$$

Result (type 5, 24 leaves):

$$\frac{x\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{3x^2}{2}\right]}{2^{1/4}}$$

Problem 867: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^2\left(2+3x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 63 leaves, 3 steps):

$$\frac{3x}{2\left(2+3x^2\right)^{1/4}}-\frac{\left(2+3x^2\right)^{3/4}}{2x}-\frac{\sqrt{3}\,\text{EllipticE}\left[\frac{1}{2}\text{ArcTan}\left[\sqrt{\frac{3}{2}}\,x\right],2\right]}{2^{3/4}}$$

Result (type 5, 46 leaves):

$$-\frac{\left(2+3x^2\right)^{3/4}}{2x}+\frac{3x\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{3x^2}{2}\right]}{4\times 2^{1/4}}$$

Problem 868: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^4\left(2+3x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 83 leaves, 4 steps):

$$-\frac{9\,x}{8\,\left(2+3\,x^2\right)^{1/4}}-\frac{\left(2+3\,x^2\right)^{3/4}}{6\,x^3}+\frac{3\,\left(2+3\,x^2\right)^{3/4}}{8\,x}+\frac{3\,\sqrt{3}\,\text{EllipticE}\left[\frac{1}{2}\,\text{ArcTan}\left[\sqrt{\frac{3}{2}}\,x\right],2\right]}{4\times 2^{3/4}}$$

Result (type 5, 55 leaves):

$$\left(-\frac{1}{6\,x^3}+\frac{3}{8\,x}\right)\,\left(2+3\,x^2\right)^{3/4}-\frac{9\,x\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{3\,x^2}{2}\right]}{16\times 2^{1/4}}$$

Problem 869: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^6\,\left(2+3\,x^2\right)^{1/4}}\,dx$$

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

$$\frac{189\,x}{160\,\left(2+3\,x^2\right)^{1/4}}-\frac{\left(2+3\,x^2\right)^{3/4}}{10\,x^5}+\frac{7\,\left(2+3\,x^2\right)^{3/4}}{40\,x^3}-\frac{63\,\left(2+3\,x^2\right)^{3/4}}{160\,x}-\frac{63\,\sqrt{3}\,\text{EllipticE}\left[\frac{1}{2}\,\text{ArcTan}\left[\sqrt{\frac{3}{2}}\,x\right],2\right]}{80\times 2^{3/4}}$$

Result (type 5, 62 leaves):

$$\left(-\frac{1}{10\,x^5}+\frac{7}{40\,x^3}-\frac{63}{160\,x}\right)\,\left(2+3\,x^2\right)^{3/4}+\frac{189\,x\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{3\,x^2}{2}\right]}{320\times 2^{1/4}}$$

Problem 870: Result unnecessarily involves higher level functions.

$$\int\frac{x^6}{\left(2-3\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 83 leaves, 4 steps):

$$-\frac{32\,x\,\left(2-3\,x^2\right)^{3/4}}{1053}-\frac{40\,x^3\,\left(2-3\,x^2\right)^{3/4}}{1053}-\frac{2}{39}\,x^5\,\left(2-3\,x^2\right)^{3/4}+\frac{128\times 2^{1/4}\,\text{EllipticE}\left[\frac{1}{2}\,\text{ArcSin}\left[\sqrt{\frac{3}{2}}\,x\right],2\right]}{1053\,\sqrt{3}}$$

Result (type 5, 55 leaves):

$$\frac{1}{1053}2\,x\,\left(-\left(2-3\,x^2\right)^{3/4}\,\left(16+20\,x^2+27\,x^4\right)+16\times 2^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{3\,x^2}{2}\right]\right)$$

Problem 871: Result unnecessarily involves higher level functions.

$$\int \frac{x^4}{\left(2-3x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 65 leaves, 3 steps):

$$-\frac{8}{135}x\left(2-3x^2\right)^{3/4}-\frac{2}{27}x^3\left(2-3x^2\right)^{3/4}+\frac{32\times 2^{1/4}\,\text{EllipticE}\left[\frac{1}{2}\,\text{ArcSin}\left[\sqrt{\frac{3}{2}}\,x\right],2\right]}{135\sqrt{3}}$$

Result (type 5, 50 leaves):

$$\frac{2}{135}x\left(-\left(2-3x^2\right)^{3/4}\left(4+5x^2\right)+4\times 2^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{3x^2}{2}\right]\right)$$

Problem 872: Result unnecessarily involves higher level functions.

$$\int \frac{x^2}{\left(2-3x^2\right)^{1/4}}\,dx$$

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

$$-\frac{2}{15}x\left(2-3x^2\right)^{3/4}+\frac{8\times 2^{1/4}\,\text{EllipticE}\left[\frac{1}{2}\,\text{ArcSin}\left[\sqrt{\frac{3}{2}}\,x\right],2\right]}{15\sqrt{3}}$$

Result (type 5, 41 leaves):

$$-\frac{2}{15}x\left(\left(2-3x^2\right)^{3/4}-2^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{3x^2}{2}\right]\right)$$

Problem 873: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(2-3x^2\right)^{1/4}}\,dx$$

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

$$\frac{2\times 2^{1/4}\,\text{EllipticE}\left[\frac{1}{2}\,\text{ArcSin}\left[\sqrt{\frac{3}{2}}\,x\right],2\right]}{\sqrt{3}}$$

Result (type 5, 24 leaves):

$$\frac{x\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{3x^2}{2}\right]}{2^{1/4}}$$

Problem 874: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^2 \left(2-3 x^2\right)^{1/4}} \, dx$$

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

$$-\frac{\left(2-3 x^2\right)^{3/4}}{2 x}-\frac{\sqrt{3}\ \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\sqrt{\frac{3}{2}}\ x\right],2\right]}{2^{3/4}}$$

Result (type 5, 46 leaves):

$$-\frac{\left(2-3 x^2\right)^{3/4}}{2 x}-\frac{3 x\ \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{3 x^2}{2}\right]}{4\times 2^{1/4}}$$

Problem 875: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^4 \left(2-3 x^2\right)^{1/4}} \, dx$$

Optimal (type 4, 67 leaves, 3 steps):

$$-\frac{\left(2-3 x^2\right)^{3/4}}{6 x^3}-\frac{3 \left(2-3 x^2\right)^{3/4}}{8 x}-\frac{3 \sqrt{3}\ \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\sqrt{\frac{3}{2}}\ x\right],2\right]}{4\times 2^{3/4}}$$

Result (type 5, 55 leaves):

$$\left(-\frac{1}{6 x^3}-\frac{3}{8 x}\right) \left(2-3 x^2\right)^{3/4}-\frac{9 x\ \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{3 x^2}{2}\right]}{16\times 2^{1/4}}$$

Problem 876: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^6 \left(2-3 x^2\right)^{1/4}} \, dx$$

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

$$-\frac{\left(2-3 x^2\right)^{3/4}}{10 x^5}-\frac{7 \left(2-3 x^2\right)^{3/4}}{40 x^3}-\frac{63 \left(2-3 x^2\right)^{3/4}}{160 x}-\frac{63 \sqrt{3}\ \text{EllipticE}\left[\frac{1}{2} \text{ArcSin}\left[\sqrt{\frac{3}{2}}\ x\right],2\right]}{80\times 2^{3/4}}$$

Result (type 5, 62 leaves):

$$\left(-\frac{1}{10 x^5}-\frac{7}{40 x^3}-\frac{63}{160 x}\right) \left(2-3 x^2\right)^{3/4}-\frac{189 x\ \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{3 x^2}{2}\right]}{320\times 2^{1/4}}$$

Problem 877: Result unnecessarily involves higher level functions.

$$\int \frac{x^6}{\left(2+3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 83 leaves, 4 steps):

$$\frac{160 x \left(2+3 x^2\right)^{1/4}}{2079}-\frac{40}{693} x^3 \left(2+3 x^2\right)^{1/4}+\frac{2}{33} x^5 \left(2+3 x^2\right)^{1/4}-\frac{320\times 2^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcTan}\left[\sqrt{\frac{3}{2}} x\right],2\right]}{2079 \sqrt{3}}$$

Result (type 5, 54 leaves):

$$\frac{1}{2079} 2 x \left(\left(2+3 x^2\right)^{1/4} \left(80-60 x^2+63 x^4\right)-80\times 2^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{3 x^2}{2}\right]\right)$$

Problem 878: Result unnecessarily involves higher level functions.

$$\int \frac{x^4}{\left(2+3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 65 leaves, 3 steps):

$$-\frac{8}{63} x \left(2+3 x^2\right)^{1/4}+\frac{2}{21} x^3 \left(2+3 x^2\right)^{1/4}+\frac{16\times 2^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcTan}\left[\sqrt{\frac{3}{2}} x\right],2\right]}{63 \sqrt{3}}$$

Result (type 5, 49 leaves):

$$\frac{2}{63} x \left(\left(-4+3 x^2\right) \left(2+3 x^2\right)^{1/4}+4\times 2^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{3 x^2}{2}\right]\right)$$

Problem 879: Result unnecessarily involves higher level functions.

$$\int \frac{x^2}{\left(2+3 x^2\right)^{3/4}} \, dx$$

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

$$\frac{2}{9} x \left(2+3 x^2\right)^{1/4}-\frac{4\times 2^{3/4} \text{EllipticF}\left[\frac{1}{2} \text{ArcTan}\left[\sqrt{\frac{3}{2}} x\right],2\right]}{9 \sqrt{3}}$$

Result (type 5, 41 leaves):

$$\frac{2}{9} x \left(\left(2+3 x^2\right)^{1/4}-2^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{3 x^2}{2}\right]\right)$$

Problem 880: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(2+3\,x^2\right)^{3/4}}\,dx$$

Optimal (type 4, 27 leaves, 1 step):

$$\frac{2^{3/4}\,\text{EllipticF}\left[\frac{1}{2}\,\text{ArcTan}\left[\sqrt{\frac{3}{2}}\,x\right],\,2\right]}{\sqrt{3}}$$

Result (type 5, 24 leaves):

$$\frac{x\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{3}{2},\,-\frac{3\,x^2}{2}\right]}{2^{3/4}}$$

Problem 881: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^2\,\left(2+3\,x^2\right)^{3/4}}\,dx$$

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

$$-\frac{\left(2+3\,x^2\right)^{1/4}}{2\,x}-\frac{\sqrt{3}\,\text{EllipticF}\left[\frac{1}{2}\,\text{ArcTan}\left[\sqrt{\frac{3}{2}}\,x\right],\,2\right]}{2\times 2^{1/4}}$$

Result (type 5, 46 leaves):

$$-\frac{\left(2+3\,x^2\right)^{1/4}}{2\,x}-\frac{3\,x\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{3}{2},\,-\frac{3\,x^2}{2}\right]}{4\times 2^{3/4}}$$

Problem 882: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^4\,\left(2+3\,x^2\right)^{3/4}}\,dx$$

Optimal (type 4, 67 leaves, 3 steps):

$$-\frac{\left(2+3\,x^2\right)^{1/4}}{6\,x^3}+\frac{5\,\left(2+3\,x^2\right)^{1/4}}{8\,x}+\frac{5\,\sqrt{3}\,\text{EllipticF}\left[\frac{1}{2}\,\text{ArcTan}\left[\sqrt{\frac{3}{2}}\,x\right],\,2\right]}{8\times 2^{1/4}}$$

Result (type 5, 55 leaves):

$$\left(-\frac{1}{6\,x^3}+\frac{5}{8\,x}\right)\,\left(2+3\,x^2\right)^{1/4}+\frac{15\,x\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{3}{2},\,-\frac{3\,x^2}{2}\right]}{16\times 2^{3/4}}$$

Problem 883: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^6 \left(2+3 x^2\right)^{3/4}} \, dx$$

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

$$-\frac{\left(2+3 x^2\right)^{1/4}}{10 x^5}+\frac{9 \left(2+3 x^2\right)^{1/4}}{40 x^3}-\frac{27 \left(2+3 x^2\right)^{1/4}}{32 x}-\frac{27 \sqrt{3}\ \text{EllipticF}\left[\frac{1}{2} \text{ArcTan}\left[\sqrt{\frac{3}{2}}\ x\right],2\right]}{32 \times 2^{1/4}}$$

Result (type 5, 58 leaves):

$$-\frac{\left(2+3 x^2\right)^{1/4} \left(16-36 x^2+135 x^4\right)}{160 x^5}-\frac{81\, x\, \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{3 x^2}{2}\right]}{64 \times 2^{3/4}}$$

Problem 884: Result unnecessarily involves higher level functions.

$$\int \frac{x^6}{\left(2-3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 83 leaves, 4 steps):

$$-\frac{160\, x \left(2-3 x^2\right)^{1/4}}{2079}-\frac{40}{693} x^3 \left(2-3 x^2\right)^{1/4}-\frac{2}{33} x^5 \left(2-3 x^2\right)^{1/4}+\frac{320 \times 2^{3/4}\ \text{EllipticF}\left[\frac{1}{2} \text{ArcSin}\left[\sqrt{\frac{3}{2}}\ x\right],2\right]}{2079 \sqrt{3}}$$

Result (type 5, 55 leaves):

$$\frac{1}{2079} 2 x \left(-\left(2-3 x^2\right)^{1/4} \left(80+60 x^2+63 x^4\right)+80 \times 2^{1/4}\ \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{3 x^2}{2}\right]\right)$$

Problem 885: Result unnecessarily involves higher level functions.

$$\int \frac{x^4}{\left(2-3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 65 leaves, 3 steps):

$$-\frac{8}{63} x \left(2-3 x^2\right)^{1/4}-\frac{2}{21} x^3 \left(2-3 x^2\right)^{1/4}+\frac{16 \times 2^{3/4}\ \text{EllipticF}\left[\frac{1}{2} \text{ArcSin}\left[\sqrt{\frac{3}{2}}\ x\right],2\right]}{63 \sqrt{3}}$$

Result (type 5, 50 leaves):

$$\frac{2}{63} x \left(-\left(2-3 x^2\right)^{1/4} \left(4+3 x^2\right)+4 \times 2^{1/4}\ \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{3 x^2}{2}\right]\right)$$

Problem 886: Result unnecessarily involves higher level functions.

$$\int \frac{x^2}{\left(2-3x^2\right)^{3/4}}\,dx$$

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

$$-\frac{2}{9}x\left(2-3x^2\right)^{1/4}+\frac{4\times 2^{3/4}\,\text{EllipticF}\left[\frac{1}{2}\text{ArcSin}\left[\sqrt{\frac{3}{2}}\,x\right],2\right]}{9\sqrt{3}}$$

Result (type 5, 41 leaves):

$$-\frac{2}{9}x\left(\left(2-3x^2\right)^{1/4}-2^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{3x^2}{2}\right]\right)$$

Problem 887: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(2-3x^2\right)^{3/4}}\,dx$$

Optimal (type 4, 27 leaves, 1 step):

$$\frac{2^{3/4}\,\text{EllipticF}\left[\frac{1}{2}\text{ArcSin}\left[\sqrt{\frac{3}{2}}\,x\right],2\right]}{\sqrt{3}}$$

Result (type 5, 24 leaves):

$$\frac{x\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{3x^2}{2}\right]}{2^{3/4}}$$

Problem 888: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^2\left(2-3x^2\right)^{3/4}}\,dx$$

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

$$-\frac{\left(2-3x^2\right)^{1/4}}{2x}+\frac{\sqrt{3}\,\text{EllipticF}\left[\frac{1}{2}\text{ArcSin}\left[\sqrt{\frac{3}{2}}\,x\right],2\right]}{2\times 2^{1/4}}$$

Result (type 5, 46 leaves):

$$-\frac{\left(2-3x^2\right)^{1/4}}{2x}+\frac{3x\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{3x^2}{2}\right]}{4\times 2^{3/4}}$$

Problem 889: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^4 \left(2-3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 67 leaves, 3 steps):

$$-\frac{\left(2-3 x^2\right)^{1/4}}{6 x^3}-\frac{5 \left(2-3 x^2\right)^{1/4}}{8 x}+\frac{5 \sqrt{3}\, \text{EllipticF}\left[\frac{1}{2} \text{ArcSin}\left[\sqrt{\frac{3}{2}}\, x\right],2\right]}{8 \times 2^{1/4}}$$

Result (type 5, 55 leaves):

$$\left(-\frac{1}{6 x^3}-\frac{5}{8 x}\right) \left(2-3 x^2\right)^{1/4}+\frac{15 x\, \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{3 x^2}{2}\right]}{16 \times 2^{3/4}}$$

Problem 890: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^6 \left(2-3 x^2\right)^{3/4}} \, dx$$

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

$$-\frac{\left(2-3 x^2\right)^{1/4}}{10 x^5}-\frac{9 \left(2-3 x^2\right)^{1/4}}{40 x^3}-\frac{27 \left(2-3 x^2\right)^{1/4}}{32 x}+\frac{27 \sqrt{3}\, \text{EllipticF}\left[\frac{1}{2} \text{ArcSin}\left[\sqrt{\frac{3}{2}}\, x\right],2\right]}{32 \times 2^{1/4}}$$

Result (type 5, 58 leaves):

$$-\frac{\left(2-3 x^2\right)^{1/4} \left(16+36 x^2+135 x^4\right)}{160 x^5}+\frac{81 x\, \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{3 x^2}{2}\right]}{64 \times 2^{3/4}}$$

Problem 891: Result unnecessarily involves higher level functions.

$$\int \frac{x^6}{\left(-2+3 x^2\right)^{1/4}} \, dx$$

Optimal (type 4, 258 leaves, 7 steps):

$$\frac{32\,x\,\left(-2+3\,x^2\right)^{3/4}}{1053}+\frac{40\,x^3\,\left(-2+3\,x^2\right)^{3/4}}{1053}+\frac{2}{39}\,x^5\,\left(-2+3\,x^2\right)^{3/4}+\frac{128\,x\,\left(-2+3\,x^2\right)^{1/4}}{1053\,\left(\sqrt{2}+\sqrt{-2+3\,x^2}\right)}-\frac{1}{1053\,\sqrt{3}\,x}128\times 2^{1/4}\sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3\,x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2+3\,x^2}\right)\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{\left(-2+3\,x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]+\frac{1}{1053\,\sqrt{3}\,x}64\times 2^{1/4}\sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3\,x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2+3\,x^2}\right)\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{\left(-2+3\,x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 68 leaves):

$$\left(2\,x\,\left(-32+8\,x^2+6\,x^4+81\,x^6+16\times 2^{3/4}\,\left(2-3\,x^2\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{3\,x^2}{2}\right]\right)\right)\Big/\left(1053\,\left(-2+3\,x^2\right)^{1/4}\right)$$

Problem 892: Result unnecessarily involves higher level functions.

$$\int\frac{x^4}{\left(-2+3\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 240 leaves, 6 steps):

$$\frac{8}{135}\,x\,\left(-2+3\,x^2\right)^{3/4}+\frac{2}{27}\,x^3\,\left(-2+3\,x^2\right)^{3/4}+\frac{32\,x\,\left(-2+3\,x^2\right)^{1/4}}{135\,\left(\sqrt{2}+\sqrt{-2+3\,x^2}\right)}-\frac{1}{135\,\sqrt{3}\,x}32\times 2^{1/4}\sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3\,x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2+3\,x^2}\right)\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{\left(-2+3\,x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]+\frac{1}{135\,\sqrt{3}\,x}16\times 2^{1/4}\sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3\,x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2+3\,x^2}\right)\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{\left(-2+3\,x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 63 leaves):

$$\frac{1}{135\,\left(-2+3\,x^2\right)^{1/4}}2\,x\,\left(-8+2\,x^2+15\,x^4+4\times 2^{3/4}\,\left(2-3\,x^2\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{3\,x^2}{2}\right]\right)$$

Problem 893: Result unnecessarily involves higher level functions.

$$\int\frac{x^2}{\left(-2+3\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 222 leaves, 5 steps):

$$\frac{2}{15}x\left(-2+3x^2\right)^{3/4}+\frac{8x\left(-2+3x^2\right)^{1/4}}{15\left(\sqrt{2}+\sqrt{-2+3x^2}\right)}-\frac{1}{15\sqrt{3}\,x}8\times 2^{1/4}\sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3x^2}\right)^2}}$$
$$\left(\sqrt{2}+\sqrt{-2+3x^2}\right)\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{\left(-2+3x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]+\frac{1}{15\sqrt{3}\,x}$$
$$4\times 2^{1/4}\sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2+3x^2}\right)\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{\left(-2+3x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 57 leaves):

$$\frac{2x\left(-2+3x^2+2^{3/4}\left(2-3x^2\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{3x^2}{2}\right]\right)}{15\left(-2+3x^2\right)^{1/4}}$$

Problem 894: Result unnecessarily involves higher level functions.

$$\int\frac{1}{\left(-2+3x^2\right)^{1/4}}\,dx$$

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

$$\frac{2x\left(-2+3x^2\right)^{1/4}}{\sqrt{2}+\sqrt{-2+3x^2}}-\frac{1}{\sqrt{3}\,x}$$
$$2\times 2^{1/4}\sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2+3x^2}\right)\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{\left(-2+3x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]+$$
$$\frac{1}{\sqrt{3}\,x}2^{1/4}\sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2+3x^2}\right)\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{\left(-2+3x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 41 leaves):

$$\frac{x\left(2-3x^2\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{3x^2}{2}\right]}{\left(-4+6x^2\right)^{1/4}}$$

Problem 895: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^2\left(-2+3x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 221 leaves, 5 steps):

$$\frac{\left(-2+3 x^2\right)^{3/4}}{2 x}-\frac{3 x \left(-2+3 x^2\right)^{1/4}}{2 \left(\sqrt{2}+\sqrt{-2+3 x^2}\right)}+\frac{1}{2^{3/4} x}\sqrt{3}\sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3 x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2+3 x^2}\right) \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{\left(-2+3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]-\frac{1}{2\times 2^{3/4} x}\sqrt{3}\sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3 x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2+3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2+3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 63 leaves) :

$$\frac{-8+12 x^2-3\times 2^{3/4} x^2 \left(2-3 x^2\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{3 x^2}{2}\right]}{8 x \left(-2+3 x^2\right)^{1/4}}$$

Problem 896: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^4 \left(-2+3 x^2\right)^{1/4}} \, dx$$

Optimal (type 4, 242 leaves, 6 steps) :

$$\frac{\left(-2+3 x^2\right)^{3/4}}{6 x^3}+\frac{3 \left(-2+3 x^2\right)^{3/4}}{8 x}-\frac{9 x \left(-2+3 x^2\right)^{1/4}}{8 \left(\sqrt{2}+\sqrt{-2+3 x^2}\right)}+\frac{1}{4\times 2^{3/4} x}3\sqrt{3}\sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3 x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2+3 x^2}\right) \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{\left(-2+3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]-\frac{1}{8\times 2^{3/4} x}3\sqrt{3}\sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3 x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2+3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2+3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 71 leaves) :

$$\left(4 \left(-8-6 x^2+27 x^4\right)-27\times 2^{3/4} x^4 \left(2-3 x^2\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{3 x^2}{2}\right]\right)\Big/\left(96 x^3 \left(-2+3 x^2\right)^{1/4}\right)$$

Problem 897: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^6 \left(-2+3 x^2\right)^{1/4}} \, dx$$

Optimal (type 4, 260 leaves, 7 steps) :

$$\frac{\left(-2+3x^2\right)^{3/4}}{10x^5}+\frac{7\left(-2+3x^2\right)^{3/4}}{40x^3}+\frac{63\left(-2+3x^2\right)^{3/4}}{160x}-\frac{189x\left(-2+3x^2\right)^{1/4}}{160\left(\sqrt{2}+\sqrt{-2+3x^2}\right)}+\frac{1}{80\times 2^{3/4}x}63\sqrt{3}\sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2+3x^2}\right)\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{\left(-2+3x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]-\frac{1}{160\times 2^{3/4}x}63\sqrt{3}\sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2+3x^2}\right)\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{\left(-2+3x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 76 leaves):

$$\left(4\left(-32-8x^2-42x^4+189x^6\right)-189\times 2^{3/4}x^6\left(2-3x^2\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\frac{3x^2}{2}\right]\right)\Big/\left(640x^5\left(-2+3x^2\right)^{1/4}\right)$$

Problem 898: Result unnecessarily involves higher level functions.

$$\int\frac{x^6}{\left(-2-3x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 260 leaves, 7 steps):

$$-\frac{32x\left(-2-3x^2\right)^{3/4}}{1053}+\frac{40x^3\left(-2-3x^2\right)^{3/4}}{1053}-\frac{2}{39}x^5\left(-2-3x^2\right)^{3/4}-\frac{128x\left(-2-3x^2\right)^{1/4}}{1053\left(\sqrt{2}+\sqrt{-2-3x^2}\right)}-\frac{1}{1053\sqrt{3}x}128\times 2^{1/4}\sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2-3x^2}\right)\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{\left(-2-3x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]+\frac{1}{1053\sqrt{3}x}64\times 2^{1/4}\sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2-3x^2}\right)\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{\left(-2-3x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 68 leaves):

$$\left(2x\left(32+8x^2-6x^4+81x^6-16\times 2^{3/4}\left(2+3x^2\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{3x^2}{2}\right]\right)\right)\Big/\left(1053\left(-2-3x^2\right)^{1/4}\right)$$

Problem 899: Result unnecessarily involves higher level functions.

$$\int\frac{x^4}{\left(-2-3x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 242 leaves, 6 steps):

$$\frac{8}{135} x \left(-2-3 x^2\right)^{3/4}-\frac{2}{27} x^3 \left(-2-3 x^2\right)^{3/4}+\frac{32 x \left(-2-3 x^2\right)^{1/4}}{135 \left(\sqrt{2}+\sqrt{-2-3 x^2}\right)}+\frac{1}{135 \sqrt{3}\, x}32\times 2^{1/4} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]-\frac{1}{135 \sqrt{3}\, x}16\times 2^{1/4} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 63 leaves):

$$\frac{1}{135 \left(-2-3 x^2\right)^{1/4}}2 x \left(-8-2 x^2+15 x^4+4\times 2^{3/4} \left(2+3 x^2\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{3 x^2}{2}\right]\right)$$

Problem 900: Result unnecessarily involves higher level functions.

$$\int \frac{x^2}{\left(-2-3 x^2\right)^{1/4}} \, dx$$

Optimal (type 4, 224 leaves, 5 steps):

$$-\frac{2}{15} x \left(-2-3 x^2\right)^{3/4}-\frac{8 x \left(-2-3 x^2\right)^{1/4}}{15 \left(\sqrt{2}+\sqrt{-2-3 x^2}\right)}-\frac{1}{15 \sqrt{3}\, x}8\times 2^{1/4} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]+\frac{1}{15 \sqrt{3}\, x}4\times 2^{1/4} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 58 leaves):

$$\frac{2 x \left(2+3 x^2-2^{3/4} \left(2+3 x^2\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{3 x^2}{2}\right]\right)}{15 \left(-2-3 x^2\right)^{1/4}}$$

Problem 901: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(-2-3 x^2\right)^{1/4}} \, dx$$

Optimal (type 4, 202 leaves, 4 steps):

$$\frac{2 x \left(-2-3 x^2\right)^{1/4}}{\sqrt{2}+\sqrt{-2-3 x^2}}+\frac{1}{\sqrt{3}\, x}2\times 2^{1/4} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]-\frac{1}{\sqrt{3}\, x}2^{1/4} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 41 leaves):

$$\frac{x \left(2+3 x^2\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{3 x^2}{2}\right]}{\left(-4-6 x^2\right)^{1/4}}$$

Problem 902: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^2 \left(-2-3 x^2\right)^{1/4}} \, dx$$

Optimal (type 4, 223 leaves, 5 steps):

$$\frac{\left(-2-3 x^2\right)^{3/4}}{2 x}+\frac{3 x \left(-2-3 x^2\right)^{1/4}}{2 \left(\sqrt{2}+\sqrt{-2-3 x^2}\right)}+\frac{1}{2^{3/4} x}\sqrt{3} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]-\frac{1}{2\times 2^{3/4} x}\sqrt{3} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 63 leaves):

$$\frac{-8-12 x^2+3\times 2^{3/4} x^2 \left(2+3 x^2\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{3 x^2}{2}\right]}{8 x \left(-2-3 x^2\right)^{1/4}}$$

Problem 903: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^4 \left(-2-3 x^2\right)^{1/4}} \, dx$$

Optimal (type 4, 244 leaves, 6 steps):

$$\frac{\left(-2-3 x^2\right)^{3/4}}{6 x^3}-\frac{3 \left(-2-3 x^2\right)^{3/4}}{8 x}-\frac{9 x \left(-2-3 x^2\right)^{1/4}}{8 \left(\sqrt{2}+\sqrt{-2-3 x^2}\right)}-\frac{1}{4\times 2^{3/4} x}3 \sqrt{3} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}}$$
$$\left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]+\frac{1}{8\times 2^{3/4} x}$$
$$3 \sqrt{3} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 71 leaves):

$$\left(4 \left(-8+6 x^2+27 x^4\right)-27\times 2^{3/4} x^4 \left(2+3 x^2\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{3 x^2}{2}\right]\right)\Big/$$
$$\left(96 x^3 \left(-2-3 x^2\right)^{1/4}\right)$$

Problem 904: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^6 \left(-2-3 x^2\right)^{1/4}} \, dx$$

Optimal (type 4, 262 leaves, 7 steps):

$$\frac{\left(-2-3 x^2\right)^{3/4}}{10 x^5}-\frac{7 \left(-2-3 x^2\right)^{3/4}}{40 x^3}+\frac{63 \left(-2-3 x^2\right)^{3/4}}{160 x}+$$
$$\frac{189 x \left(-2-3 x^2\right)^{1/4}}{160 \left(\sqrt{2}+\sqrt{-2-3 x^2}\right)}+\frac{1}{80\times 2^{3/4} x}63 \sqrt{3} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}}$$
$$\left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]-\frac{1}{160\times 2^{3/4} x}$$
$$63 \sqrt{3} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 76 leaves):

$$\left(-4 \left(32-8 x^2+42 x^4+189 x^6\right)+189\times 2^{3/4} x^6 \left(2+3 x^2\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},-\frac{3 x^2}{2}\right]\right)\Big/$$
$$\left(640 x^5 \left(-2-3 x^2\right)^{1/4}\right)$$

Problem 905: Result unnecessarily involves higher level functions.

$$\int \frac{x^6}{\left(-2+3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 138 leaves, 5 steps):

$$\frac{160\, x\left(-2+3 x^2\right)^{1/4}}{2079}+\frac{40}{693} x^3\left(-2+3 x^2\right)^{1/4}+\frac{2}{33} x^5\left(-2+3 x^2\right)^{1/4}+\frac{1}{2079 \sqrt{3}\, x}$$
$$160\times 2^{3/4} \sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2+3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2+3 x^2\right)^{1/4}}{2^{1/4}}\right], \frac{1}{2}\right]$$

Result (type 5, 68 leaves):

$$\left(2 x\left(-160+120 x^2+54 x^4+189 x^6+80\times 2^{1/4}\left(2-3 x^2\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{3}{2}, \frac{3 x^2}{2}\right]\right)\right)\Big/ \left(2079\left(-2+3 x^2\right)^{3/4}\right)$$

Problem 906: Result unnecessarily involves higher level functions.

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

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

$$\frac{8}{63} x\left(-2+3 x^2\right)^{1/4}+\frac{2}{21} x^3\left(-2+3 x^2\right)^{1/4}+\frac{1}{63 \sqrt{3}\, x}$$
$$8\times 2^{3/4} \sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2+3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2+3 x^2\right)^{1/4}}{2^{1/4}}\right], \frac{1}{2}\right]$$

Result (type 5, 63 leaves):

$$\frac{1}{63\left(-2+3 x^2\right)^{3/4}} 2 x\left(-8+6 x^2+9 x^4+4\times 2^{1/4}\left(2-3 x^2\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{3}{2}, \frac{3 x^2}{2}\right]\right)$$

Problem 907: Result unnecessarily involves higher level functions.

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

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

$$\frac{2}{9} x\left(-2+3 x^2\right)^{1/4}+\frac{1}{9 \sqrt{3}\, x}$$
$$2\times 2^{3/4} \sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2+3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2+3 x^2\right)^{1/4}}{2^{1/4}}\right], \frac{1}{2}\right]$$

Result (type 5, 57 leaves):

$$\frac{2 x\left(-2+3 x^2+2^{1/4}\left(2-3 x^2\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{3}{2}, \frac{3 x^2}{2}\right]\right)}{9\left(-2+3 x^2\right)^{3/4}}$$

Problem 908: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(-2+3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 82 leaves, 2 steps):

$$\frac{1}{2^{1/4} \sqrt{3} \, x} \sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2+3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2+3 x^2\right)^{1/4}}{2^{1/4}}\right], \frac{1}{2}\right]$$

Result (type 5, 41 leaves):

$$\frac{x \left(2-3 x^2\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{3}{2}, \frac{3 x^2}{2}\right]}{\left(-4+6 x^2\right)^{3/4}}$$

Problem 909: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^2 \left(-2+3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 104 leaves, 3 steps):

$$\frac{\left(-2+3 x^2\right)^{1/4}}{2 x} + \frac{1}{4 \times 2^{1/4} x} \sqrt{3} \sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2+3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2+3 x^2\right)^{1/4}}{2^{1/4}}\right], \frac{1}{2}\right]$$

Result (type 5, 63 leaves):

$$\frac{-8+12 x^2+3 \times 2^{1/4} x^2 \left(2-3 x^2\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{3}{2}, \frac{3 x^2}{2}\right]}{8 x \left(-2+3 x^2\right)^{3/4}}$$

Problem 910: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^4 \left(-2+3 x^2\right)^{3/4}} \, dx$$

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

$$\frac{\left(-2+3 x^2\right)^{1/4}}{6 x^3} + \frac{5 \left(-2+3 x^2\right)^{1/4}}{8 x} + \frac{1}{16 \times 2^{1/4} x} 5 \sqrt{3} \sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2+3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2+3 x^2\right)^{1/4}}{2^{1/4}}\right], \frac{1}{2}\right]$$

Result (type 5, 68 leaves):

$$\left(-32-72 x^2+180 x^4+45\times 2^{1/4} x^4 \left(2-3 x^2\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{3 x^2}{2}\right]\right)\Big/\left(96 x^3 \left(-2+3 x^2\right)^{3/4}\right)$$

Problem 911: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^6 \left(-2+3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 140 leaves, 5 steps):

$$\frac{\left(-2+3 x^2\right)^{1/4}}{10 x^5}+\frac{9 \left(-2+3 x^2\right)^{1/4}}{40 x^3}+\frac{27 \left(-2+3 x^2\right)^{1/4}}{32 x}+\frac{1}{64\times 2^{1/4} x}27 \sqrt{3} \sqrt{\frac{x^2}{\left(\sqrt{2}+\sqrt{-2+3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2+3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2+3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 73 leaves):

$$\left(-128-96 x^2-648 x^4+1620 x^6+405\times 2^{1/4} x^6 \left(2-3 x^2\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\frac{3 x^2}{2}\right]\right)\Big/\left(640 x^5 \left(-2+3 x^2\right)^{3/4}\right)$$

Problem 912: Result unnecessarily involves higher level functions.

$$\int \frac{x^6}{\left(-2-3 x^2\right)^{3/4}} \, dx$$

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

$$-\frac{160 x \left(-2-3 x^2\right)^{1/4}}{2079}+\frac{40}{693} x^3 \left(-2-3 x^2\right)^{1/4}-\frac{2}{33} x^5 \left(-2-3 x^2\right)^{1/4}+\frac{1}{2079 \sqrt{3} x}160\times 2^{3/4} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 68 leaves):

$$\left(2 x \left(160+120 x^2-54 x^4+189 x^6-80\times 2^{1/4} \left(2+3 x^2\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{3 x^2}{2}\right]\right)\right)\Big/\left(2079 \left(-2-3 x^2\right)^{3/4}\right)$$

Problem 913: Result unnecessarily involves higher level functions.

$$\int \frac{x^4}{\left(-2-3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 121 leaves, 4 steps):

$$\frac{8}{63} x \left(-2-3 x^2\right)^{1/4}-\frac{2}{21} x^3 \left(-2-3 x^2\right)^{1/4}-\frac{1}{63 \sqrt{3}\, x}8\times 2^{3/4} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 63 leaves):

$$\frac{1}{63 \left(-2-3 x^2\right)^{3/4}}2 x \left(-8-6 x^2+9 x^4+4\times 2^{1/4} \left(2+3 x^2\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{3 x^2}{2}\right]\right)$$

Problem 914: Result unnecessarily involves higher level functions.

$$\int \frac{x^2}{\left(-2-3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 103 leaves, 3 steps):

$$-\frac{2}{9} x \left(-2-3 x^2\right)^{1/4}+\frac{1}{9 \sqrt{3}\, x}2\times 2^{3/4} \sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 58 leaves):

$$\frac{2 x \left(2+3 x^2-2^{1/4} \left(2+3 x^2\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{3 x^2}{2}\right]\right)}{9 \left(-2-3 x^2\right)^{3/4}}$$

Problem 915: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(-2-3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 84 leaves, 2 steps):

$$-\frac{1}{2^{1/4} \sqrt{3}\, x}\sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}} \left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 41 leaves):

$$\frac{x \left(2+3 x^2\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{3 x^2}{2}\right]}{\left(-4-6 x^2\right)^{3/4}}$$

Problem 916: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^2 \left(-2-3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 105 leaves, 3 steps):

$$\frac{\left(-2-3 x^2\right)^{1/4}}{2 x}+\frac{1}{4\times 2^{1/4} x}\sqrt{3}\sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 63 leaves):

$$\frac{-8-12 x^2-3\times 2^{1/4} x^2 \left(2+3 x^2\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{3 x^2}{2}\right]}{8 x \left(-2-3 x^2\right)^{3/4}}$$

Problem 917: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^4 \left(-2-3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 123 leaves, 4 steps):

$$\frac{\left(-2-3 x^2\right)^{1/4}}{6 x^3}-\frac{5 \left(-2-3 x^2\right)^{1/4}}{8 x}-\frac{1}{16\times 2^{1/4} x}5 \sqrt{3}\sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3 x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2-3 x^2}\right) \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{\left(-2-3 x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 68 leaves):

$$\left(-32+72 x^2+180 x^4+45\times 2^{1/4} x^4 \left(2+3 x^2\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{3 x^2}{2}\right]\right) \Big/ \left(96 x^3 \left(-2-3 x^2\right)^{3/4}\right)$$

Problem 918: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^6 \left(-2-3 x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 141 leaves, 5 steps):

$$\frac{\left(-2-3x^2\right)^{1/4}}{10x^5}-\frac{9\left(-2-3x^2\right)^{1/4}}{40x^3}+\frac{27\left(-2-3x^2\right)^{1/4}}{32x}+\frac{1}{64\times 2^{1/4}x}27\sqrt{3}\sqrt{-\frac{x^2}{\left(\sqrt{2}+\sqrt{-2-3x^2}\right)^2}}\left(\sqrt{2}+\sqrt{-2-3x^2}\right)\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{\left(-2-3x^2\right)^{1/4}}{2^{1/4}}\right],\frac{1}{2}\right]$$

Result (type 5, 76 leaves):

$$\left(-4\left(32-24x^2+162x^4+405x^6\right)-405\times 2^{1/4}x^6\left(2+3x^2\right)^{3/4}\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},-\frac{3x^2}{2}\right]\right)\Big/\left(640x^5\left(-2-3x^2\right)^{3/4}\right)$$

Problem 919: Result unnecessarily involves higher level functions.

$$\int (c\,x)^{7/2}\left(a+b\,x^2\right)^{1/4}dx$$

Optimal (type 4, 152 leaves, 8 steps):

$$-\frac{a^2c^3\sqrt{c\,x}\left(a+b\,x^2\right)^{1/4}}{12b^2}+\frac{a\,c\,(c\,x)^{5/2}\left(a+b\,x^2\right)^{1/4}}{30b}+\frac{(c\,x)^{9/2}\left(a+b\,x^2\right)^{1/4}}{5c}-\frac{a^{5/2}c^2\left(1+\frac{a}{b\,x^2}\right)^{3/4}(c\,x)^{3/2}\text{EllipticF}\left[\frac{1}{2}\text{ArcCot}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],2\right]}{12b^{3/2}\left(a+b\,x^2\right)^{3/4}}$$

Result (type 5, 98 leaves):

$$\frac{1}{60b^2\left(a+b\,x^2\right)^{3/4}}c^3\sqrt{c\,x}\left(-5a^3-3a^2b\,x^2+14a\,b^2x^4+12b^3x^6+5a^3\left(1+\frac{b\,x^2}{a}\right)^{3/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{5}{4},-\frac{b\,x^2}{a}\right]\right)$$

Problem 920: Result unnecessarily involves higher level functions.

$$\int (c\,x)^{3/2}\left(a+b\,x^2\right)^{1/4}dx$$

Optimal (type 4, 118 leaves, 7 steps):

$$\frac{a\,c\sqrt{c\,x}\left(a+b\,x^2\right)^{1/4}}{6b}+\frac{(c\,x)^{5/2}\left(a+b\,x^2\right)^{1/4}}{3c}+\frac{a^{3/2}\left(1+\frac{a}{b\,x^2}\right)^{3/4}(c\,x)^{3/2}\text{EllipticF}\left[\frac{1}{2}\text{ArcCot}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],2\right]}{6\sqrt{b}\left(a+b\,x^2\right)^{3/4}}$$

Result (type 5, 83 leaves):

$$\frac{1}{6b\left(a+b\,x^2\right)^{3/4}}c\sqrt{c\,x}\left(a^2+3a\,b\,x^2+2b^2x^4-a^2\left(1+\frac{b\,x^2}{a}\right)^{3/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{5}{4},-\frac{b\,x^2}{a}\right]\right)$$

Problem 921: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{1/4}}{\sqrt{c x}}\, dx$$

Optimal (type 4, 89 leaves, 6 steps):

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

Result (type 5, 62 leaves):

$$\frac{x \left(a+b x^2+a \left(1+\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{5}{4},-\frac{b x^2}{a}\right]\right)}{\sqrt{c x}\, \left(a+b x^2\right)^{3/4}}$$

Problem 922: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{1/4}}{(c x)^{5/2}}\, dx$$

Optimal (type 4, 94 leaves, 6 steps):

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

Result (type 5, 69 leaves):

$$-\frac{2 x \left(a+b x^2-b x^2 \left(1+\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{5}{4},-\frac{b x^2}{a}\right]\right)}{3 (c x)^{5/2} \left(a+b x^2\right)^{3/4}}$$

Problem 923: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{1/4}}{(c x)^{9/2}}\, dx$$

Optimal (type 4, 123 leaves, 7 steps):

$$-\frac{2 \left(a+b x^2\right)^{1/4}}{7 c\, (c x)^{7/2}}-\frac{2 b \left(a+b x^2\right)^{1/4}}{21 a c^3\, (c x)^{3/2}}+\frac{4 b^{5/2} \left(1+\frac{a}{b x^2}\right)^{3/4} (c x)^{3/2}\, \text{EllipticF}\left[\frac{1}{2}\, \text{ArcCot}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right],2\right]}{21 a^{3/2} c^6 \left(a+b x^2\right)^{3/4}}$$

Result (type 5, 92 leaves):

$$-\left(\left(2 \sqrt{c x} \left(3 a^2+4 a b x^2+b^2 x^4+2 b^2 x^4 \left(1+\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{5}{4},-\frac{b x^2}{a}\right]\right)\right)\Big/ \left(21 a c^5 x^4 \left(a+b x^2\right)^{3/4}\right)\right)$$

Problem 924: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{1/4}}{(c x)^{13/2}}\, dx$$

Optimal (type 4, 154 leaves, 8 steps):

$$-\frac{2 \left(a+b x^2\right)^{1/4}}{11 c (c x)^{11/2}}-\frac{2 b \left(a+b x^2\right)^{1/4}}{77 a c^3 (c x)^{7/2}}+\frac{4 b^2 \left(a+b x^2\right)^{1/4}}{77 a^2 c^5 (c x)^{3/2}}-\frac{8 b^{7/2} \left(1+\frac{a}{b x^2}\right)^{3/4} (c x)^{3/2} \text{EllipticF}\left[\frac{1}{2} \text{ArcCot}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{77 a^{5/2} c^8 \left(a+b x^2\right)^{3/4}}$$

Result (type 5, 103 leaves):

$$\left(2 \sqrt{c x} \left(-7 a^3-8 a^2 b x^2+a b^2 x^4+2 b^3 x^6+4 b^3 x^6 \left(1+\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{5}{4},-\frac{b x^2}{a}\right]\right)\right) \Big/ \left(77 a^2 c^7 x^6 \left(a+b x^2\right)^{3/4}\right)$$

Problem 925: Result unnecessarily involves higher level functions.

$$\int (c x)^{5/2} \left(a+b x^2\right)^{1/4}\, dx$$

Optimal (type 3, 147 leaves, 7 steps):

$$\frac{a c (c x)^{3/2} \left(a+b x^2\right)^{1/4}}{16 b}+\frac{(c x)^{7/2} \left(a+b x^2\right)^{1/4}}{4 c}+\frac{3 a^2 c^{5/2} \text{ArcTan}\left[\frac{b^{1/4} \sqrt{c x}}{\sqrt{c} \left(a+b x^2\right)^{1/4}}\right]}{32 b^{7/4}}-\frac{3 a^2 c^{5/2} \text{ArcTanh}\left[\frac{b^{1/4} \sqrt{c x}}{\sqrt{c} \left(a+b x^2\right)^{1/4}}\right]}{32 b^{7/4}}$$

Result (type 5, 83 leaves):

$$\frac{1}{16 b \left(a+b x^2\right)^{3/4}} c (c x)^{3/2} \left(a^2+5 a b x^2+4 b^2 x^4-a^2 \left(1+\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},-\frac{b x^2}{a}\right]\right)$$

Problem 926: Result unnecessarily involves higher level functions.

$$\int \sqrt{c x} \left(a+b x^2\right)^{1/4}\, dx$$

Optimal (type 3, 116 leaves, 6 steps):

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

Result (type 5, 68 leaves):

$$\frac{1}{6\,\left(a+b\,x^2\right)^{3/4}}x\,\sqrt{c\,x}\,\left(3\,\left(a+b\,x^2\right)+a\,\left(1+\frac{b\,x^2}{a}\right)^{3/4}\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},-\frac{b\,x^2}{a}\right]\right)$$

Problem 927: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+b\,x^2\right)^{1/4}}{(c\,x)^{3/2}}\,dx$$

Optimal (type 3, 107 leaves, 6 steps):

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

Result (type 5, 72 leaves):

$$\left(x\,\left(-6\,\left(a+b\,x^2\right)+2\,b\,x^2\,\left(1+\frac{b\,x^2}{a}\right)^{3/4}\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},-\frac{b\,x^2}{a}\right]\right)\right)\Big/\left(3\,(c\,x)^{3/2}\,\left(a+b\,x^2\right)^{3/4}\right)$$

Problem 932: Result unnecessarily involves higher level functions.

$$\int(c\,x)^{3/2}\,\left(a-b\,x^2\right)^{1/4}\,dx$$

Optimal (type 4, 122 leaves, 7 steps):

$$-\frac{a\,c\,\sqrt{c\,x}\,\left(a-b\,x^2\right)^{1/4}}{6\,b}+\frac{(c\,x)^{5/2}\,\left(a-b\,x^2\right)^{1/4}}{3\,c}-\frac{a^{3/2}\,\left(1-\frac{a}{b\,x^2}\right)^{3/4}\,(c\,x)^{3/2}\,\text{EllipticF}\left[\frac{1}{2}\,\text{ArcCsc}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],2\right]}{6\,\sqrt{b}\,\left(a-b\,x^2\right)^{3/4}}$$

Result (type 5, 84 leaves):

$$-\frac{1}{6\,b\,\left(a-b\,x^2\right)^{3/4}}c\,\sqrt{c\,x}\,\left(a^2-3\,a\,b\,x^2+2\,b^2\,x^4-a^2\,\left(1-\frac{b\,x^2}{a}\right)^{3/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{5}{4},\frac{b\,x^2}{a}\right]\right)$$

Problem 933: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a-b\,x^2\right)^{1/4}}{\sqrt{c\,x}}\,dx$$

Optimal (type 4, 92 leaves, 6 steps):

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

Result (type 5, 66 leaves):

$$\frac{a\,x-b\,x^3+a\,x\,\left(1-\frac{b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{3}{4},\,\frac{5}{4},\,\frac{b\,x^2}{a}\right]}{\sqrt{c\,x}\,\left(a-b\,x^2\right)^{3/4}}$$

Problem 934: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a-b\,x^2\right)^{1/4}}{(c\,x)^{5/2}}\,dx$$

Optimal (type 4, 97 leaves, 6 steps):

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

Result (type 5, 70 leaves):

$$-\frac{2\,x\,\left(a-b\,x^2+b\,x^2\,\left(1-\frac{b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{3}{4},\,\frac{5}{4},\,\frac{b\,x^2}{a}\right]\right)}{3\,(c\,x)^{5/2}\,\left(a-b\,x^2\right)^{3/4}}$$

Problem 935: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a-b\,x^2\right)^{1/4}}{(c\,x)^{9/2}}\,dx$$

Optimal (type 4, 127 leaves, 7 steps):

$$-\frac{2\,\left(a-b\,x^2\right)^{1/4}}{7\,c\,(c\,x)^{7/2}}+\frac{2\,b\,\left(a-b\,x^2\right)^{1/4}}{21\,a\,c^3\,(c\,x)^{3/2}}+\frac{4\,b^{5/2}\,\left(1-\frac{a}{b\,x^2}\right)^{3/4}\,(c\,x)^{3/2}\,\text{EllipticF}\left[\frac{1}{2}\,\text{ArcCsc}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],\,2\right]}{21\,a^{3/2}\,c^6\,\left(a-b\,x^2\right)^{3/4}}$$

Result (type 5, 93 leaves):

$$-\left(\left(2\,\sqrt{c\,x}\,\left(3\,a^2-4\,a\,b\,x^2+b^2\,x^4+2\,b^2\,x^4\,\left(1-\frac{b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{3}{4},\,\frac{5}{4},\,\frac{b\,x^2}{a}\right]\right)\right)\Big/\left(21\,a\,c^5\,x^4\,\left(a-b\,x^2\right)^{3/4}\right)\right)$$

Problem 936: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a-b\,x^2\right)^{1/4}}{(c\,x)^{13/2}}\,dx$$

Optimal (type 4, 159 leaves, 8 steps):

$$-\frac{2\left(a-b x^2\right)^{1/4}}{11 c (c x)^{11/2}}+\frac{2 b \left(a-b x^2\right)^{1/4}}{77 a c^3 (c x)^{7/2}}+\frac{4 b^2 \left(a-b x^2\right)^{1/4}}{77 a^2 c^5 (c x)^{3/2}}+\frac{8 b^{7/2} \left(1-\frac{a}{b x^2}\right)^{3/4} (c x)^{3/2} \text{EllipticF}\left[\frac{1}{2} \text{ArcCsc}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{77 a^{5/2} c^8 \left(a-b x^2\right)^{3/4}}$$

Result (type 5, 105 leaves):

$$-\left(\left(2 \sqrt{c x} \left(7 a^3-8 a^2 b x^2-a b^2 x^4+2 b^3 x^6+4 b^3 x^6 \left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{5}{4},\frac{b x^2}{a}\right]\right)\right)\Big/\left(77 a^2 c^7 x^6 \left(a-b x^2\right)^{3/4}\right)\right)$$

Problem 937: Result unnecessarily involves higher level functions.

$$\int (c x)^{5/2} \left(a-b x^2\right)^{1/4} \, dx$$

Optimal (type 3, 343 leaves, 13 steps):

$$-\frac{a c (c x)^{3/2} \left(a-b x^2\right)^{1/4}}{16 b}+\frac{(c x)^{7/2} \left(a-b x^2\right)^{1/4}}{4 c}-\frac{3 a^2 c^{5/2} \text{ArcTan}\left[1-\frac{\sqrt{2} b^{1/4} \sqrt{c x}}{\sqrt{c} \left(a-b x^2\right)^{1/4}}\right]}{32 \sqrt{2} b^{7/4}}+\frac{3 a^2 c^{5/2} \text{ArcTan}\left[1+\frac{\sqrt{2} b^{1/4} \sqrt{c x}}{\sqrt{c} \left(a-b x^2\right)^{1/4}}\right]}{32 \sqrt{2} b^{7/4}}+\frac{3 a^2 c^{5/2} \text{Log}\left[\sqrt{c}+\frac{\sqrt{b} \sqrt{c} x}{\sqrt{a-b x^2}}-\frac{\sqrt{2} b^{1/4} \sqrt{c x}}{\left(a-b x^2\right)^{1/4}}\right]}{64 \sqrt{2} b^{7/4}}-\frac{3 a^2 c^{5/2} \text{Log}\left[\sqrt{c}+\frac{\sqrt{b} \sqrt{c} x}{\sqrt{a-b x^2}}+\frac{\sqrt{2} b^{1/4} \sqrt{c x}}{\left(a-b x^2\right)^{1/4}}\right]}{64 \sqrt{2} b^{7/4}}$$

Result (type 5, 84 leaves):

$$-\frac{1}{16 b \left(a-b x^2\right)^{3/4}} c (c x)^{3/2} \left(a^2-5 a b x^2+4 b^2 x^4-a^2 \left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\frac{b x^2}{a}\right]\right)$$

Problem 938: Result unnecessarily involves higher level functions.

$$\int \sqrt{c x} \left(a-b x^2\right)^{1/4} \, dx$$

Optimal (type 3, 307 leaves, 12 steps):

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

Result (type 5, 69 leaves):

$$\frac{1}{6\,\left(a-b\,x^2\right)^{3/4}}x\,\sqrt{c\,x}\,\left(3\,a-3\,b\,x^2+a\,\left(1-\frac{b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\frac{b\,x^2}{a}\right]\right)$$

Problem 939: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a-b\,x^2\right)^{1/4}}{(c\,x)^{3/2}}\,dx$$

Optimal (type 3, 296 leaves, 12 steps):

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

Result (type 5, 72 leaves):

$$-\frac{2\,x\,\left(3\,a-3\,b\,x^2+b\,x^2\,\left(1-\frac{b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\frac{b\,x^2}{a}\right]\right)}{3\,(c\,x)^{3/2}\,\left(a-b\,x^2\right)^{3/4}}$$

Problem 944: Result unnecessarily involves higher level functions.

$$\int\frac{(c\,x)^{3/2}}{\left(a+b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 3, 117 leaves, 6 steps):

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

Result (type 5, 69 leaves):

$$\frac{c\,\sqrt{c\,x}\,\left(a+b\,x^2-a\,\left(1+\frac{b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},-\frac{b\,x^2}{a}\right]\right)}{2\,b\,\left(a+b\,x^2\right)^{1/4}}$$

Problem 945: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\sqrt{c\,x}\,\left(a+b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 3, 83 leaves, 5 steps):

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

Result (type 5, 55 leaves):

$$\frac{2\,x\,\left(\frac{a+b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},-\frac{b\,x^2}{a}\right]}{\sqrt{c\,x}\,\left(a+b\,x^2\right)^{1/4}}$$

Problem 949: Result unnecessarily involves higher level functions.

$$\int \frac{(c\,x)^{9/2}}{\left(a+b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 156 leaves, 6 steps):

$$\frac{7\,a^2\,c^4\,x\,\sqrt{c\,x}}{20\,b^2\,\left(a+b\,x^2\right)^{1/4}}-\frac{7\,a\,c^3\,(c\,x)^{3/2}\,\left(a+b\,x^2\right)^{3/4}}{30\,b^2}+$$
$$\frac{c\,(c\,x)^{7/2}\,\left(a+b\,x^2\right)^{3/4}}{5\,b}+\frac{7\,a^{5/2}\,c^4\,\left(1+\frac{a}{b\,x^2}\right)^{1/4}\sqrt{c\,x}\;\text{EllipticE}\left[\frac{1}{2}\,\text{ArcCot}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],2\right]}{20\,b^{5/2}\,\left(a+b\,x^2\right)^{1/4}}$$

Result (type 5, 87 leaves):

$$\frac{1}{30\,b^2\,\left(a+b\,x^2\right)^{1/4}}$$
$$c^3\,(c\,x)^{3/2}\,\left(-7\,a^2-a\,b\,x^2+6\,b^2\,x^4+7\,a^2\,\left(1+\frac{b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},-\frac{b\,x^2}{a}\right]\right)$$

Problem 950: Result unnecessarily involves higher level functions.

$$\int \frac{(c\,x)^{5/2}}{\left(a+b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 125 leaves, 5 steps):

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

Result (type 5, 69 leaves):

$$\frac{1}{3\,b\,\left(a+b\,x^2\right)^{1/4}}c\,(c\,x)^{3/2}\left(a+b\,x^2-a\,\left(1+\frac{b\,x^2}{a}\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},-\frac{b\,x^2}{a}\right]\right)$$

Problem 951: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{c\,x}}{\left(a+b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 83 leaves, 4 steps):

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

Result (type 5, 57 leaves):

$$\frac{2\,x\,\sqrt{c\,x}\,\left(\frac{a+b\,x^2}{a}\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},-\frac{b\,x^2}{a}\right]}{3\,\left(a+b\,x^2\right)^{1/4}}$$

Problem 952: Result unnecessarily involves higher level functions.

$$\int\frac{1}{(c\,x)^{3/2}\left(a+b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 90 leaves, 4 steps):

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

Result (type 5, 75 leaves):

$$\left(x\left(-6\,\left(a+b\,x^2\right)+4\,b\,x^2\,\left(1+\frac{b\,x^2}{a}\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},-\frac{b\,x^2}{a}\right]\right)\right)\Big/\left(3\,a\,(c\,x)^{3/2}\left(a+b\,x^2\right)^{1/4}\right)$$

Problem 953: Result unnecessarily involves higher level functions.

$$\int\frac{1}{(c\,x)^{7/2}\left(a+b\,x^2\right)^{1/4}}\,dx$$

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

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

Result (type 5, 88 leaves):

$$\left(x\left(-6 a^2+6 a b x^2+12 b^2 x^4-8 b^2 x^4\left(1+\frac{b x^2}{a}\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},-\frac{b x^2}{a}\right]\right)\right)\Big/\left(15 a^2 (c x)^{7/2}\left(a+b x^2\right)^{1/4}\right)$$

Problem 954: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(c x)^{11/2}\left(a+b x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 157 leaves, 6 steps):

$$-\frac{8 b^2}{15 a^2 c^5 \sqrt{c x}\left(a+b x^2\right)^{1/4}}-\frac{2\left(a+b x^2\right)^{3/4}}{9 a c (c x)^{9/2}}+\frac{4 b\left(a+b x^2\right)^{3/4}}{15 a^2 c^3 (c x)^{5/2}}+\frac{8 b^{5/2}\left(1+\frac{a}{b x^2}\right)^{1/4}\sqrt{c x}\,\text{EllipticE}\left[\frac{1}{2}\text{ArcCot}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],2\right]}{15 a^{5/2} c^6\left(a+b x^2\right)^{1/4}}$$

Result (type 5, 103 leaves):

$$\left(2\sqrt{c x}\left(-5 a^3+a^2 b x^2-6 a b^2 x^4-12 b^3 x^6+8 b^3 x^6\left(1+\frac{b x^2}{a}\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},-\frac{b x^2}{a}\right]\right)\right)\Big/\left(45 a^3 c^6 x^5\left(a+b x^2\right)^{1/4}\right)$$

Problem 955: Result unnecessarily involves higher level functions.

$$\int \frac{(c x)^{3/2}}{\left(a-b x^2\right)^{1/4}}\,dx$$

Optimal (type 3, 308 leaves, 12 steps):

$$-\frac{c\sqrt{c x}\left(a-b x^2\right)^{3/4}}{2 b}-\frac{a c^{3/2}\text{ArcTan}\left[1-\frac{\sqrt{2}\, b^{1/4}\sqrt{c x}}{\sqrt{c}\left(a-b x^2\right)^{1/4}}\right]}{4\sqrt{2}\, b^{5/4}}+\frac{a c^{3/2}\text{ArcTan}\left[1+\frac{\sqrt{2}\, b^{1/4}\sqrt{c x}}{\sqrt{c}\left(a-b x^2\right)^{1/4}}\right]}{4\sqrt{2}\, b^{5/4}}-\frac{a c^{3/2}\text{Log}\left[\sqrt{c}+\frac{\sqrt{b}\sqrt{c}\, x}{\sqrt{a-b x^2}}-\frac{\sqrt{2}\, b^{1/4}\sqrt{c x}}{\left(a-b x^2\right)^{1/4}}\right]}{8\sqrt{2}\, b^{5/4}}+\frac{a c^{3/2}\text{Log}\left[\sqrt{c}+\frac{\sqrt{b}\sqrt{c}\, x}{\sqrt{a-b x^2}}+\frac{\sqrt{2}\, b^{1/4}\sqrt{c x}}{\left(a-b x^2\right)^{1/4}}\right]}{8\sqrt{2}\, b^{5/4}}$$

Result (type 5, 71 leaves):

$$\frac{c\sqrt{c x}\left(-a+b x^2+a\left(1-\frac{b x^2}{a}\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\frac{b x^2}{a}\right]\right)}{2 b\left(a-b x^2\right)^{1/4}}$$

Problem 956: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\sqrt{c\,x}\,\left(a-b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 3, 272 leaves, 11 steps):

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

Result (type 5, 56 leaves):

$$\frac{2\,x\,\left(\frac{a-b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\frac{b\,x^2}{a}\right]}{\sqrt{c\,x}\,\left(a-b\,x^2\right)^{1/4}}$$

Problem 960: Result unnecessarily involves higher level functions.

$$\int \frac{(c\,x)^{5/2}}{\left(a-b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 128 leaves, 5 steps):

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

Result (type 5, 71 leaves):

$$\frac{1}{3\,b\,\left(a-b\,x^2\right)^{1/4}}c\,(c\,x)^{3/2}\,\left(-a+b\,x^2+a\,\left(1-\frac{b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},\frac{b\,x^2}{a}\right]\right)$$

Problem 961: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{c\,x}}{\left(a-b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 90 leaves, 4 steps):

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

Result (type 5, 58 leaves):

$$\frac{2\,x\,\sqrt{c\,x}\,\left(\frac{a-b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{3}{4},\,\frac{7}{4},\,\frac{b\,x^2}{a}\right]}{3\,\left(a-b\,x^2\right)^{1/4}}$$

Problem 962: Result unnecessarily involves higher level functions.

$$\int\frac{1}{(c\,x)^{3/2}\,\left(a-b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 68 leaves, 3 steps):

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

Result (type 5, 76 leaves):

$$\left(x\,\left(-6\,a+6\,b\,x^2-4\,b\,x^2\,\left(1-\frac{b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{3}{4},\,\frac{7}{4},\,\frac{b\,x^2}{a}\right]\right)\right)\Big/\left(3\,a\,(c\,x)^{3/2}\,\left(a-b\,x^2\right)^{1/4}\right)$$

Problem 963: Result unnecessarily involves higher level functions.

$$\int\frac{1}{(c\,x)^{7/2}\,\left(a-b\,x^2\right)^{1/4}}\,dx$$

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

$$-\frac{2\,\left(a-b\,x^2\right)^{3/4}}{5\,a\,c\,(c\,x)^{5/2}}-\frac{4\,b^{3/2}\,\left(1-\frac{a}{b\,x^2}\right)^{1/4}\,\sqrt{c\,x}\,\text{EllipticE}\left[\frac{1}{2}\,\text{ArcCsc}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],\,2\right]}{5\,a^{3/2}\,c^4\,\left(a-b\,x^2\right)^{1/4}}$$

Result (type 5, 89 leaves):

$$\left(x\,\left(-6\,\left(a^2+a\,b\,x^2-2\,b^2\,x^4\right)-8\,b^2\,x^4\,\left(1-\frac{b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{3}{4},\,\frac{7}{4},\,\frac{b\,x^2}{a}\right]\right)\right)\Big/\left(15\,a^2\,(c\,x)^{7/2}\,\left(a-b\,x^2\right)^{1/4}\right)$$

Problem 964: Result unnecessarily involves higher level functions.

$$\int\frac{1}{(c\,x)^{11/2}\,\left(a-b\,x^2\right)^{1/4}}\,dx$$

Optimal (type 4, 130 leaves, 5 steps):

$$-\frac{2\,\left(a-b\,x^2\right)^{3/4}}{9\,a\,c\,(c\,x)^{9/2}}-\frac{4\,b\,\left(a-b\,x^2\right)^{3/4}}{15\,a^2\,c^3\,(c\,x)^{5/2}}-\frac{8\,b^{5/2}\,\left(1-\frac{a}{b\,x^2}\right)^{1/4}\,\sqrt{c\,x}\,\text{EllipticE}\left[\frac{1}{2}\,\text{ArcCsc}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],\,2\right]}{15\,a^{5/2}\,c^6\,\left(a-b\,x^2\right)^{1/4}}$$

Result (type 5, 104 leaves) :

$$-\left(\left(2\sqrt{c\,x}\left(5\,a^3+a^2\,b\,x^2+6\,a\,b^2\,x^4-12\,b^3\,x^6+8\,b^3\,x^6\left(1-\frac{b\,x^2}{a}\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},\frac{b\,x^2}{a}\right]\right)\right)\Big/\left(45\,a^3\,c^6\,x^5\left(a-b\,x^2\right)^{1/4}\right)\right)$$

Problem 965: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 86 leaves, 6 steps) :

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

Result (type 5, 66 leaves) :

$$\frac{c\sqrt{c\,x}\left(a+b\,x^2-a\left(1+\frac{b\,x^2}{a}\right)^{3/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{5}{4},-\frac{b\,x^2}{a}\right]\right)}{b\left(a+b\,x^2\right)^{3/4}}$$

Problem 966: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 55 leaves) :

$$\frac{2\,x\left(\frac{a+b\,x^2}{a}\right)^{3/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{5}{4},-\frac{b\,x^2}{a}\right]}{\sqrt{c\,x}\left(a+b\,x^2\right)^{3/4}}$$

Problem 967: Result unnecessarily involves higher level functions.

$$\int\frac{1}{(c\,x)^{5/2}\left(a+b\,x^2\right)^{3/4}}\,dx$$

Optimal (type 4, 97 leaves, 6 steps) :

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

Result (type 5, 72 leaves):

$$-\frac{2\,x\,\left(a+b\,x^2+2\,b\,x^2\,\left(1+\frac{b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{3}{4},\,\frac{5}{4},\,-\frac{b\,x^2}{a}\right]\right)}{3\,a\,(c\,x)^{5/2}\,\left(a+b\,x^2\right)^{3/4}}$$

Problem 968: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(c\,x)^{9/2}\,\left(a+b\,x^2\right)^{3/4}}\,dx$$

Optimal (type 4, 126 leaves, 7 steps):

$$-\frac{2\,\left(a+b\,x^2\right)^{1/4}}{7\,a\,c\,(c\,x)^{7/2}}+\frac{4\,b\,\left(a+b\,x^2\right)^{1/4}}{7\,a^2\,c^3\,(c\,x)^{3/2}}-\frac{8\,b^{5/2}\,\left(1+\frac{a}{b\,x^2}\right)^{3/4}\,(c\,x)^{3/2}\,\text{EllipticF}\left[\frac{1}{2}\,\text{ArcCot}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],\,2\right]}{7\,a^{5/2}\,c^6\,\left(a+b\,x^2\right)^{3/4}}$$

Result (type 5, 92 leaves):

$$\left(2\,\sqrt{c\,x}\,\left(-a^2+a\,b\,x^2+2\,b^2\,x^4+4\,b^2\,x^4\,\left(1+\frac{b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{3}{4},\,\frac{5}{4},\,-\frac{b\,x^2}{a}\right]\right)\right)\Big/\left(7\,a^2\,c^5\,x^4\,\left(a+b\,x^2\right)^{3/4}\right)$$

Problem 969: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(c\,x)^{13/2}\,\left(a+b\,x^2\right)^{3/4}}\,dx$$

Optimal (type 4, 157 leaves, 8 steps):

$$-\frac{2\,\left(a+b\,x^2\right)^{1/4}}{11\,a\,c\,(c\,x)^{11/2}}+\frac{20\,b\,\left(a+b\,x^2\right)^{1/4}}{77\,a^2\,c^3\,(c\,x)^{7/2}}-\frac{40\,b^2\,\left(a+b\,x^2\right)^{1/4}}{77\,a^3\,c^5\,(c\,x)^{3/2}}+\frac{80\,b^{7/2}\,\left(1+\frac{a}{b\,x^2}\right)^{3/4}\,(c\,x)^{3/2}\,\text{EllipticF}\left[\frac{1}{2}\,\text{ArcCot}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],\,2\right]}{77\,a^{7/2}\,c^8\,\left(a+b\,x^2\right)^{3/4}}$$

Result (type 5, 104 leaves):

$$-\left(\left(2\,\sqrt{c\,x}\,\left(7\,a^3-3\,a^2\,b\,x^2+10\,a\,b^2\,x^4+20\,b^3\,x^6+40\,b^3\,x^6\,\left(1+\frac{b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{3}{4},\,\frac{5}{4},\,-\frac{b\,x^2}{a}\right]\right)\right)\Big/\left(77\,a^3\,c^7\,x^6\,\left(a+b\,x^2\right)^{3/4}\right)\right)$$

Problem 970: Result unnecessarily involves higher level functions.

$$\int \frac{(c\,x)^{5/2}}{\left(a+b\,x^2\right)^{3/4}}\,dx$$

Optimal (type 3, 117 leaves, 6 steps):

$$\frac{c\,(c\,x)^{3/2}\,\left(a+b\,x^2\right)^{1/4}}{2\,b}+\frac{3\,a\,c^{5/2}\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{\sqrt{c}\,\left(a+b\,x^2\right)^{1/4}}\right]}{4\,b^{7/4}}-\frac{3\,a\,c^{5/2}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{\sqrt{c}\,\left(a+b\,x^2\right)^{1/4}}\right]}{4\,b^{7/4}}$$

Result (type 5, 69 leaves):

$$\frac{1}{2\,b\,\left(a+b\,x^2\right)^{3/4}}c\,(c\,x)^{3/2}\,\left(a+b\,x^2-a\,\left(1+\frac{b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{3}{4},\,\frac{3}{4},\,\frac{7}{4},\,-\frac{b\,x^2}{a}\right]\right)$$

Problem 971: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 84 leaves, 5 steps):

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

Result (type 5, 57 leaves):

$$\frac{2\,x\,\sqrt{c\,x}\,\left(\frac{a+b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{3}{4},\,\frac{3}{4},\,\frac{7}{4},\,-\frac{b\,x^2}{a}\right]}{3\,\left(a+b\,x^2\right)^{3/4}}$$

Problem 975: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 91 leaves, 6 steps):

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

Result (type 5, 68 leaves):

$$\frac{c\,\sqrt{c\,x}\,\left(-a+b\,x^2+a\,\left(1-\frac{b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{3}{4},\,\frac{5}{4},\,\frac{b\,x^2}{a}\right]\right)}{b\,\left(a-b\,x^2\right)^{3/4}}$$

Problem 976: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 56 leaves):

$$\frac{2 x \left(\frac{a-b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{3}{4}, \frac{5}{4}, \frac{b x^2}{a}\right]}{\sqrt{c x} \left(a-b x^2\right)^{3/4}}$$

Problem 977: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(c x)^{5/2} \left(a-b x^2\right)^{3/4}} \, dx$$

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

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

Result (type 5, 76 leaves):

$$\left(x \left(-2 a+2 b x^2+4 b x^2 \left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{3}{4}, \frac{5}{4}, \frac{b x^2}{a}\right]\right)\right) \Big/ \left(3 a (c x)^{5/2} \left(a-b x^2\right)^{3/4}\right)$$

Problem 978: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(c x)^{9/2} \left(a-b x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 130 leaves, 7 steps):

$$-\frac{2 \left(a-b x^2\right)^{1/4}}{7 a c (c x)^{7/2}}-\frac{4 b \left(a-b x^2\right)^{1/4}}{7 a^2 c^3 (c x)^{3/2}}-\frac{8 b^{5/2} \left(1-\frac{a}{b x^2}\right)^{3/4} (c x)^{3/2} \text{EllipticF}\left[\frac{1}{2} \text{ArcCsc}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right], 2\right]}{7 a^{5/2} c^6 \left(a-b x^2\right)^{3/4}}$$

Result (type 5, 94 leaves):

$$\left(\sqrt{c x} \left(-2 \left(a^2+a b x^2-2 b^2 x^4\right)+8 b^2 x^4 \left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{3}{4}, \frac{5}{4}, \frac{b x^2}{a}\right]\right)\right) \Big/ \left(7 a^2 c^5 x^4 \left(a-b x^2\right)^{3/4}\right)$$

Problem 979: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(c x)^{13/2} \left(a-b x^2\right)^{3/4}} \, dx$$

Optimal (type 4, 162 leaves, 8 steps):

$$-\frac{2\left(a-b x^2\right)^{1/4}}{11 a c (c x)^{11/2}}-\frac{20 b\left(a-b x^2\right)^{1/4}}{77 a^2 c^3 (c x)^{7/2}}-\frac{40 b^2\left(a-b x^2\right)^{1/4}}{77 a^3 c^5 (c x)^{3/2}}-\frac{80 b^{7/2}\left(1-\frac{a}{b x^2}\right)^{3/4} (c x)^{3/2} \text{EllipticF}\left[\frac{1}{2} \text{ArcCsc}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{77 a^{7/2} c^8\left(a-b x^2\right)^{3/4}}$$

Result (type 5, 105 leaves):

$$\left(2 \sqrt{c x}\left(-7 a^3-3 a^2 b x^2-10 a b^2 x^4+20 b^3 x^6+40 b^3 x^6\left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{5}{4},\frac{b x^2}{a}\right]\right)\right)\Big/\left(77 a^3 c^7 x^6\left(a-b x^2\right)^{3/4}\right)$$

Problem 980: Result unnecessarily involves higher level functions.

$$\int \frac{(c x)^{5/2}}{\left(a-b x^2\right)^{3/4}} \, dx$$

Optimal (type 3, 308 leaves, 12 steps):

$$-\frac{c (c x)^{3/2}\left(a-b x^2\right)^{1/4}}{2 b}-\frac{3 a c^{5/2} \text{ArcTan}\left[1-\frac{\sqrt{2} b^{1/4} \sqrt{c x}}{\sqrt{c}\left(a-b x^2\right)^{1/4}}\right]}{4 \sqrt{2} b^{7/4}}+\frac{3 a c^{5/2} \text{ArcTan}\left[1+\frac{\sqrt{2} b^{1/4} \sqrt{c x}}{\sqrt{c}\left(a-b x^2\right)^{1/4}}\right]}{4 \sqrt{2} b^{7/4}}+\frac{3 a c^{5/2} \text{Log}\left[\sqrt{c}+\frac{\sqrt{b} \sqrt{c} x}{\sqrt{a-b x^2}}-\frac{\sqrt{2} b^{1/4} \sqrt{c x}}{\left(a-b x^2\right)^{1/4}}\right]}{8 \sqrt{2} b^{7/4}}-\frac{3 a c^{5/2} \text{Log}\left[\sqrt{c}+\frac{\sqrt{b} \sqrt{c} x}{\sqrt{a-b x^2}}+\frac{\sqrt{2} b^{1/4} \sqrt{c x}}{\left(a-b x^2\right)^{1/4}}\right]}{8 \sqrt{2} b^{7/4}}$$

Result (type 5, 71 leaves):

$$\frac{1}{2 b\left(a-b x^2\right)^{3/4}} c (c x)^{3/2}\left(-a+b x^2+a\left(1-\frac{b x^2}{a}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\frac{b x^2}{a}\right]\right)$$

Problem 981: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 272 leaves, 11 steps):

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

Result (type 5, 58 leaves):

$$\frac{2\,x\,\sqrt{c\,x}\,\left(\frac{a-b\,x^2}{a}\right)^{3/4}\,\text{Hypergeometric2F1}\left[\frac{3}{4},\,\frac{3}{4},\,\frac{7}{4},\,\frac{b\,x^2}{a}\right]}{3\,\left(a-b\,x^2\right)^{3/4}}$$

Problem 985: Result unnecessarily involves higher level functions.

$$\int \frac{(c\,x)^{7/2}}{\left(a+b\,x^2\right)^{5/4}}\,dx$$

Optimal (type 3, 146 leaves, 7 steps):

$$\frac{5\,a\,c^3\,\sqrt{c\,x}}{2\,b^2\,\left(a+b\,x^2\right)^{1/4}}+\frac{c\,(c\,x)^{5/2}}{2\,b\,\left(a+b\,x^2\right)^{1/4}}-\frac{5\,a\,c^{7/2}\,\text{ArcTan}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{\sqrt{c}\,\left(a+b\,x^2\right)^{1/4}}\right]}{4\,b^{9/4}}-\frac{5\,a\,c^{7/2}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\sqrt{c\,x}}{\sqrt{c}\,\left(a+b\,x^2\right)^{1/4}}\right]}{4\,b^{9/4}}$$

Result (type 5, 73 leaves):

$$\frac{1}{2\,b^2\,\left(a+b\,x^2\right)^{1/4}}c^3\,\sqrt{c\,x}\,\left(5\,a+b\,x^2-5\,a\,\left(1+\frac{b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{1}{4},\,\frac{5}{4},\,-\frac{b\,x^2}{a}\right]\right)$$

Problem 986: Result unnecessarily involves higher level functions.

$$\int \frac{(c\,x)^{3/2}}{\left(a+b\,x^2\right)^{5/4}}\,dx$$

Optimal (type 3, 107 leaves, 6 steps):

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

Result (type 5, 60 leaves):

$$\frac{2\,c\,\sqrt{c\,x}\,\left(-1+\left(1+\frac{b\,x^2}{a}\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{1}{4},\,\frac{5}{4},\,-\frac{b\,x^2}{a}\right]\right)}{b\,\left(a+b\,x^2\right)^{1/4}}$$

Problem 991: Result unnecessarily involves higher level functions.

$$\int \frac{(c\,x)^{13/2}}{\left(a+b\,x^2\right)^{5/4}}\,dx$$

Optimal (type 4, 155 leaves, 6 steps):

$$\frac{77\,a^2\,c^5\,(c\,x)^{3/2}}{60\,b^3\,\left(a+b\,x^2\right)^{1/4}}-\frac{11\,a\,c^3\,(c\,x)^{7/2}}{30\,b^2\,\left(a+b\,x^2\right)^{1/4}}+\frac{c\,(c\,x)^{11/2}}{5\,b\,\left(a+b\,x^2\right)^{1/4}}+$$
$$\frac{77\,a^{5/2}\,c^6\,\left(1+\frac{a}{b\,x^2}\right)^{1/4}\,\sqrt{c\,x}\,\text{EllipticE}\left[\frac{1}{2}\,\text{ArcCot}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],\,2\right]}{20\,b^{7/2}\,\left(a+b\,x^2\right)^{1/4}}$$

Result (type 5, 87 leaves):

$$\frac{1}{30\, b^3\, \left(a+b\, x^2\right)^{1/4}} c^5\, (c\, x)^{3/2}\, \left(-77\, a^2-11\, a\, b\, x^2+6\, b^2\, x^4+77\, a^2\, \left(1+\frac{b\, x^2}{a}\right)^{1/4}\, \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},-\frac{b\, x^2}{a}\right]\right)$$

Problem 992: Result unnecessarily involves higher level functions.

$$\int \frac{(c\, x)^{9/2}}{\left(a+b\, x^2\right)^{5/4}}\, dx$$

Optimal (type 4, 124 leaves, 5 steps):

$$-\frac{7\, a\, c^3\, (c\, x)^{3/2}}{6\, b^2\, \left(a+b\, x^2\right)^{1/4}}+\frac{c\, (c\, x)^{7/2}}{3\, b\, \left(a+b\, x^2\right)^{1/4}}-\frac{7\, a^{3/2}\, c^4\, \left(1+\frac{a}{b\, x^2}\right)^{1/4}\, \sqrt{c\, x}\, \text{EllipticE}\left[\frac{1}{2}\, \text{ArcCot}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right],2\right]}{2\, b^{5/2}\, \left(a+b\, x^2\right)^{1/4}}$$

Result (type 5, 73 leaves):

$$\frac{1}{3\, b^2\, \left(a+b\, x^2\right)^{1/4}} c^3\, (c\, x)^{3/2}\, \left(7\, a+b\, x^2-7\, a\, \left(1+\frac{b\, x^2}{a}\right)^{1/4}\, \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},-\frac{b\, x^2}{a}\right]\right)$$

Problem 993: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 90 leaves, 4 steps):

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

Result (type 5, 60 leaves):

$$\frac{2\, c\, (c\, x)^{3/2}\, \left(-1+\left(1+\frac{b\, x^2}{a}\right)^{1/4}\, \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},-\frac{b\, x^2}{a}\right]\right)}{b\, \left(a+b\, x^2\right)^{1/4}}$$

Problem 994: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{c\, x}}{\left(a+b\, x^2\right)^{5/4}}\, dx$$

Optimal (type 4, 63 leaves, 3 steps):

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

Result (type 5, 63 leaves):

$$-\frac{2 x \sqrt{c x} \left(-3+2 \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},-\frac{b x^2}{a}\right]\right)}{3 a \left(a+b x^2\right)^{1/4}}$$

Problem 995: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(c x)^{3/2} \left(a+b x^2\right)^{5/4}} \, dx$$

Optimal (type 4, 93 leaves, 4 steps):

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

Result (type 5, 76 leaves):

$$\left(x \left(-6 \left(a+2 b x^2\right)+8 b x^2 \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},-\frac{b x^2}{a}\right]\right)\right) \Big/ \left(3 a^2 (c x)^{3/2} \left(a+b x^2\right)^{1/4}\right)$$

Problem 996: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(c x)^{7/2} \left(a+b x^2\right)^{5/4}} \, dx$$

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

$$-\frac{2}{5 a c (c x)^{5/2} \left(a+b x^2\right)^{1/4}}+\frac{12 b}{5 a^2 c^3 \sqrt{c x} \left(a+b x^2\right)^{1/4}}-\frac{24 b^{3/2} \left(1+\frac{a}{b x^2}\right)^{1/4} \sqrt{c x} \, \text{EllipticE}\left[\frac{1}{2} \text{ArcCot}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right],2\right]}{5 a^{5/2} c^4 \left(a+b x^2\right)^{1/4}}$$

Result (type 5, 86 leaves):

$$-\left(\left(2 x \left(a^2-6 a b x^2-12 b^2 x^4+8 b^2 x^4 \left(1+\frac{b x^2}{a}\right)^{1/4} \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},-\frac{b x^2}{a}\right]\right)\right) \Big/ \left(5 a^3 (c x)^{7/2} \left(a+b x^2\right)^{1/4}\right)\right)$$

Problem 997: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(c x)^{11/2} \left(a+b x^2\right)^{5/4}} \, dx$$

Optimal (type 4, 157 leaves, 6 steps):

$$-\frac{2}{9\,a\,c\,(c\,x)^{9/2}\left(a+b\,x^2\right)^{1/4}}+\frac{4\,b}{9\,a^2\,c^3\,(c\,x)^{5/2}\left(a+b\,x^2\right)^{1/4}}-\frac{8\,b^2}{3\,a^3\,c^5\,\sqrt{c\,x}\,\left(a+b\,x^2\right)^{1/4}}+\frac{16\,b^{5/2}\left(1+\frac{a}{b\,x^2}\right)^{1/4}\sqrt{c\,x}\,\text{EllipticE}\left[\frac{1}{2}\,\text{ArcCot}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right],2\right]}{3\,a^{7/2}\,c^6\left(a+b\,x^2\right)^{1/4}}$$

Result (type 5, 105 leaves):

$$\left(\sqrt{c\,x}\left(-2\left(a^3-2\,a^2\,b\,x^2+12\,a\,b^2\,x^4+24\,b^3\,x^6\right)+32\,b^3\,x^6\left(1+\frac{b\,x^2}{a}\right)^{1/4}\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},-\frac{b\,x^2}{a}\right]\right)\right)\bigg/\left(9\,a^4\,c^6\,x^5\left(a+b\,x^2\right)^{1/4}\right)$$

Problem 1010: Result unnecessarily involves higher level functions.

$$\int x^6\left(a+b\,x^2\right)^{1/6}\,dx$$

Optimal (type 4, 345 leaves, 7 steps):

$$\frac{81\,a^3\,x\left(a+b\,x^2\right)^{1/6}}{2816\,b^3}-\frac{9\,a^2\,x^3\left(a+b\,x^2\right)^{1/6}}{704\,b^2}+\frac{3\,a\,x^5\left(a+b\,x^2\right)^{1/6}}{352\,b}+\frac{3}{22}\,x^7\left(a+b\,x^2\right)^{1/6}-\left(81\times 3^{3/4}\sqrt{2-\sqrt{3}}\;a^4\left(a+b\,x^2\right)^{1/6}\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\bigg/\left(2816\,b^4\,x\left(\frac{a}{a+b\,x^2}\right)^{1/3}\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 101 leaves):

$$\left(3\left(27\,a^4\,x+15\,a^3\,b\,x^3-4\,a^2\,b^2\,x^5+136\,a\,b^3\,x^7+128\,b^4\,x^9-27\,a^4\,x\left(1+\frac{b\,x^2}{a}\right)^{5/6}\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{3}{2},-\frac{b\,x^2}{a}\right]\right)\right)\bigg/\left(2816\,b^3\left(a+b\,x^2\right)^{5/6}\right)$$

Problem 1011: Result unnecessarily involves higher level functions.

$$\int x^4\left(a+b\,x^2\right)^{1/6}\,dx$$

Optimal (type 4, 321 leaves, 6 steps):

$$-\frac{27 a^2 x \left(a+b x^2\right)^{1/6}}{640 b^2}+\frac{3 a x^3 \left(a+b x^2\right)^{1/6}}{160 b}+\frac{3}{16} x^5 \left(a+b x^2\right)^{1/6}+\left(27\times 3^{3/4} \sqrt{2-\sqrt{3}}\; a^3 \left(a+b x^2\right)^{1/6} \left(1-\left(\frac{a}{a+b x^2}\right)^{1/3}\right) \sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\, \text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Bigg/\left(640 b^3 x \left(\frac{a}{a+b x^2}\right)^{1/3} \sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 90 leaves) :

$$\left(3 \left(-9 a^3 x-5 a^2 b x^3+44 a b^2 x^5+40 b^3 x^7+9 a^3 x \left(1+\frac{b x^2}{a}\right)^{5/6} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\right)\Big/\left(640 b^2 \left(a+b x^2\right)^{5/6}\right)$$

Problem 1012: Result unnecessarily involves higher level functions.

$$\int x^2 \left(a+b x^2\right)^{1/6} dx$$

Optimal (type 4, 297 leaves, 5 steps) :

$$\frac{3 a x \left(a+b x^2\right)^{1/6}}{40 b}+\frac{3}{10} x^3 \left(a+b x^2\right)^{1/6}-\left(3\times 3^{3/4} \sqrt{2-\sqrt{3}}\; a^2 \left(a+b x^2\right)^{1/6} \left(1-\left(\frac{a}{a+b x^2}\right)^{1/3}\right) \sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\, \text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Bigg/\left(40 b^2 x \left(\frac{a}{a+b x^2}\right)^{1/3} \sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 76 leaves) :

$$\frac{1}{40\,b\,\left(a+b\,x^2\right)^{5/6}}3\,x\,\left(a^2+5\,a\,b\,x^2+4\,b^2\,x^4-a^2\,\left(1+\frac{b\,x^2}{a}\right)^{5/6}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{5}{6},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]\right)$$

Problem 1013: Result unnecessarily involves higher level functions.

$$\int\left(a+b\,x^2\right)^{1/6}\,dx$$

Optimal (type 4, 273 leaves, 4 steps):

$$\frac{3}{4}\,x\,\left(a+b\,x^2\right)^{1/6}+\left(3^{3/4}\,\sqrt{2-\sqrt{3}}\,a\,\left(a+b\,x^2\right)^{1/6}\,\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\,\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Bigg/\left(4\,b\,x\,\left(\frac{a}{a+b\,x^2}\right)^{1/3}\,\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 62 leaves):

$$\frac{3\,x\,\left(a+b\,x^2\right)+a\,x\,\left(1+\frac{b\,x^2}{a}\right)^{5/6}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{5}{6},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]}{4\,\left(a+b\,x^2\right)^{5/6}}$$

Problem 1014: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+b\,x^2\right)^{1/6}}{x^2}\,dx$$

Optimal (type 4, 266 leaves, 4 steps):

$$-\frac{\left(a+b\,x^2\right)^{1/6}}{x}+\left(\sqrt{2-\sqrt{3}}\,\left(a+b\,x^2\right)^{1/6}\,\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\,\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Bigg/\left(3^{1/4}\,x\,\left(\frac{a}{a+b\,x^2}\right)^{1/3}\,\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 68 leaves):

$$-\frac{\left(a+b x^2\right)^{1/6}}{x}+\frac{b x \left(\frac{a+b x^2}{a}\right)^{5/6} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{3}{2},-\frac{b x^2}{a}\right]}{3 \left(a+b x^2\right)^{5/6}}$$

Problem 1015: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{1/6}}{x^4} \, dx$$

Optimal (type 4, 297 leaves, 5 steps):

$$-\frac{\left(a+b x^2\right)^{1/6}}{3 x^3}-\frac{b \left(a+b x^2\right)^{1/6}}{9 a x}-\left(2 \sqrt{2-\sqrt{3}}\, b \left(a+b x^2\right)^{1/6} \left(1-\left(\frac{a}{a+b x^2}\right)^{1/3}\right) \sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right) \Big/ \left(9\times 3^{1/4} a x \left(\frac{a}{a+b x^2}\right)^{1/3} \sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 85 leaves):

$$\left(-3 \left(3 a^2+4 a b x^2+b^2 x^4\right)-2 b^2 x^4 \left(1+\frac{b x^2}{a}\right)^{5/6} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{3}{2},-\frac{b x^2}{a}\right]\right) \Big/ \left(27 a x^3 \left(a+b x^2\right)^{5/6}\right)$$

Problem 1016: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{1/6}}{x^6} \, dx$$

Optimal (type 4, 323 leaves, 6 steps):

$$-\frac{\left(a+b x^2\right)^{1/6}}{5 x^5}-\frac{b \left(a+b x^2\right)^{1/6}}{45 a x^3}+\frac{8 b^2 \left(a+b x^2\right)^{1/6}}{135 a^2 x}+\left(16 \sqrt{2-\sqrt{3}}\, b^2 \left(a+b x^2\right)^{1/6} \left(1-\left(\frac{a}{a+b x^2}\right)^{1/3}\right) \sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Bigg/\left(135\times 3^{1/4} a^2 x \left(\frac{a}{a+b x^2}\right)^{1/3} \sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 94 leaves):

$$\left(-81 a^3-90 a^2 b x^2+15 a b^2 x^4+24 b^3 x^6+16 b^3 x^6 \left(1+\frac{b x^2}{a}\right)^{5/6} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\Bigg/\left(405 a^2 x^5 \left(a+b x^2\right)^{5/6}\right)$$

Problem 1017: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b x^2\right)^{1/6}}{x^8}\, dx$$

Optimal (type 4, 347 leaves, 7 steps):

$$-\frac{\left(a+b x^2\right)^{1/6}}{7 x^7}-\frac{b \left(a+b x^2\right)^{1/6}}{105 a x^5}+\frac{2 b^2 \left(a+b x^2\right)^{1/6}}{135 a^2 x^3}-\frac{16 b^3 \left(a+b x^2\right)^{1/6}}{405 a^3 x}-\left(32 \sqrt{2-\sqrt{3}}\, b^3 \left(a+b x^2\right)^{1/6} \left(1-\left(\frac{a}{a+b x^2}\right)^{1/3}\right) \sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Bigg/\left(405\times 3^{1/4} a^3 x \left(\frac{a}{a+b x^2}\right)^{1/3} \sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 108 leaves):

$$\left(-3\left(405 a^4+432 a^3 b x^2-15 a^2 b^2 x^4+70 a b^3 x^6+112 b^4 x^8\right)-224 b^4 x^8\left(1+\frac{b x^2}{a}\right)^{5/6} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\Big/\left(8505 a^3 x^7\left(a+b x^2\right)^{5/6}\right)$$

Problem 1018: Result unnecessarily involves higher level functions.

$$\int \frac{x^6}{\left(a+b x^2\right)^{1/6}}\,dx$$

Optimal (type 4, 659 leaves, 9 steps):

$$-\frac{243 a^3 x}{896 b^3\left(a+b x^2\right)^{1/6}}+\frac{81 a^2 x\left(a+b x^2\right)^{5/6}}{448 b^3}-\frac{9 a x^3\left(a+b x^2\right)^{5/6}}{56 b^2}+\frac{3 x^5\left(a+b x^2\right)^{5/6}}{20 b}-\frac{243 a^4 x}{896 b^3\left(\frac{a}{a+b x^2}\right)^{2/3}\left(a+b x^2\right)^{7/6}\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)}-$$

$$\left(243\times 3^{1/4}\sqrt{2+\sqrt{3}}\, a^4\left(1-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)\sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Big/$$

$$\left(1792 b^4 x\left(\frac{a}{a+b x^2}\right)^{2/3}\left(a+b x^2\right)^{1/6}\sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)+$$

$$\left(81\times 3^{3/4} a^4\left(1-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)\sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Big/$$

$$\left(448\sqrt{2}\, b^4 x\left(\frac{a}{a+b x^2}\right)^{2/3}\left(a+b x^2\right)^{1/6}\sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 90 leaves):

$$\left(3\left(135 a^3 x+15 a^2 b x^3-8 a b^2 x^5+112 b^3 x^7-135 a^3 x\left(1+\frac{b x^2}{a}\right)^{1/6} \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\right)\Big/\left(2240 b^3\left(a+b x^2\right)^{1/6}\right)$$

Problem 1019: Result unnecessarily involves higher level functions.

$$\int \frac{x^4}{\left(a+b x^2\right)^{1/6}} \, dx$$

Optimal (type 4, 635 leaves, 8 steps):

$$\frac{81 a^2 x}{224 b^2\left(a+b x^2\right)^{1/6}}-\frac{27 a x\left(a+b x^2\right)^{5/6}}{112 b^2}+\frac{3 x^3\left(a+b x^2\right)^{5/6}}{14 b}+\frac{81 a^3 x}{224 b^2\left(\frac{a}{a+b x^2}\right)^{2/3}\left(a+b x^2\right)^{7/6}\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)}+$$
$$\left(81\times 3^{1/4}\sqrt{2+\sqrt{3}}\, a^3\left(1-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)\sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right.$$
$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Big/$$
$$\left(448 b^3 x\left(\frac{a}{a+b x^2}\right)^{2/3}\left(a+b x^2\right)^{1/6}\sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)-$$
$$\left(27\times 3^{3/4} a^3\left(1-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)\sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right.$$
$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Big/$$
$$\left(112\sqrt{2}\, b^3 x\left(\frac{a}{a+b x^2}\right)^{2/3}\left(a+b x^2\right)^{1/6}\sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 79 leaves):

$$\left(3\left(-9a^2x-abx^3+8b^2x^5+9a^2x\left(1+\frac{bx^2}{a}\right)^{1/6}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{3}{2},-\frac{bx^2}{a}\right]\right)\right)\Big/\left(112b^2\left(a+bx^2\right)^{1/6}\right)$$

Problem 1020: Result unnecessarily involves higher level functions.

$$\int\frac{x^2}{\left(a+bx^2\right)^{1/6}}\,dx$$

Optimal (type 4, 611 leaves, 7 steps):

$$-\frac{9ax}{16b\left(a+bx^2\right)^{1/6}}+\frac{3x\left(a+bx^2\right)^{5/6}}{8b}-\frac{9a^2x}{16b\left(\frac{a}{a+bx^2}\right)^{2/3}\left(a+bx^2\right)^{7/6}\left(1-\sqrt{3}-\left(\frac{a}{a+bx^2}\right)^{1/3}\right)}-\left(9\times3^{1/4}\sqrt{2+\sqrt{3}}\;a^2\left(1-\left(\frac{a}{a+bx^2}\right)^{1/3}\right)\sqrt{\frac{1+\left(\frac{a}{a+bx^2}\right)^{1/3}+\left(\frac{a}{a+bx^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+bx^2}\right)^{1/3}\right)^2}}\;\text{EllipticE}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+bx^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+bx^2}\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Big/\left(32b^2x\left(\frac{a}{a+bx^2}\right)^{2/3}\left(a+bx^2\right)^{1/6}\sqrt{-\frac{1-\left(\frac{a}{a+bx^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+bx^2}\right)^{1/3}\right)^2}}\right)+\left(3\times3^{3/4}a^2\left(1-\left(\frac{a}{a+bx^2}\right)^{1/3}\right)\sqrt{\frac{1+\left(\frac{a}{a+bx^2}\right)^{1/3}+\left(\frac{a}{a+bx^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+bx^2}\right)^{1/3}\right)^2}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+bx^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+bx^2}\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Big/\left(8\sqrt{2}\,b^2x\left(\frac{a}{a+bx^2}\right)^{2/3}\left(a+bx^2\right)^{1/6}\sqrt{-\frac{1-\left(\frac{a}{a+bx^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+bx^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 62 leaves):

$$\frac{3x\left(a+bx^2-a\left(1+\frac{bx^2}{a}\right)^{1/6}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{3}{2},-\frac{bx^2}{a}\right]\right)}{8b\left(a+bx^2\right)^{1/6}}$$

Problem 1021: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(a+b x^2\right)^{1/6}} \, dx$$

Optimal (type 4, 577 leaves, 6 steps):

$$\frac{3 x}{2 \left(a+b x^2\right)^{1/6}}+\frac{3 a x}{2 \left(\frac{a}{a+b x^2}\right)^{2/3} \left(a+b x^2\right)^{7/6} \left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)}+$$

$$\left(3\times 3^{1/4} \sqrt{2+\sqrt{3}}\; a \left(1-\left(\frac{a}{a+b x^2}\right)^{1/3}\right) \sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right) \Big/$$

$$\left(4 b x \left(\frac{a}{a+b x^2}\right)^{2/3} \left(a+b x^2\right)^{1/6} \sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)-$$

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

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right) \Big/$$

$$\left(\sqrt{2}\; b x \left(\frac{a}{a+b x^2}\right)^{2/3} \left(a+b x^2\right)^{1/6} \sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 47 leaves):

$$\frac{x \left(\frac{a+b x^2}{a}\right)^{1/6} \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]}{\left(a+b x^2\right)^{1/6}}$$

Problem 1022: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^2 \left(a+b x^2\right)^{1/6}} \, dx$$

Optimal (type 4, 586 leaves, 7 steps):

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

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

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Bigg/$$

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

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

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Bigg/$$

$$\left(3^{1/4}\,x\left(\frac{a}{a+b\,x^2}\right)^{2/3}\left(a+b\,x^2\right)^{1/6}\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 70 leaves):

$$\frac{-3\left(a+b\,x^2\right)+2\,b\,x^2\left(1+\frac{b\,x^2}{a}\right)^{1/6}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{3}{2},-\frac{b\,x^2}{a}\right]}{3\,a\,x\left(a+b\,x^2\right)^{1/6}}$$

Problem 1023: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^4\left(a+b\,x^2\right)^{1/6}}\,dx$$

Optimal (type 4, 633 leaves, 8 steps):

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

$$\frac{4\,b^2\,x}{9\,a\,\left(\frac{a}{a+b\,x^2}\right)^{2/3}\,\left(a+b\,x^2\right)^{7/6}\,\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)}-$$

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

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Big/$$

$$\left(3\times 3^{3/4}\,a\,x\,\left(\frac{a}{a+b\,x^2}\right)^{2/3}\,\left(a+b\,x^2\right)^{1/6}\,\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)+$$

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

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Big/$$

$$\left(9\times 3^{1/4}\,a\,x\,\left(\frac{a}{a+b\,x^2}\right)^{2/3}\,\left(a+b\,x^2\right)^{1/6}\,\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 83 leaves) :

$$\left(-9\,a^2+3\,a\,b\,x^2+12\,b^2\,x^4-8\,b^2\,x^4\,\left(1+\frac{b\,x^2}{a}\right)^{1/6}\,\text{Hypergeometric2F1}\left[\frac{1}{6},\,\frac{1}{2},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]\right)\Big/$$

$$\left(27\,a^2\,x^3\,\left(a+b\,x^2\right)^{1/6}\right)$$

Problem 1024: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^6\,\left(a+b\,x^2\right)^{1/6}}\,dx$$

Optimal (type 4, 661 leaves, 9 steps) :

$$\frac{8 b^3 x}{27 a^3 \left(a+b x^2\right)^{1/6}}-\frac{\left(a+b x^2\right)^{5/6}}{5 a x^5}+\frac{2 b \left(a+b x^2\right)^{5/6}}{9 a^2 x^3}-\frac{8 b^2 \left(a+b x^2\right)^{5/6}}{27 a^3 x}+\frac{8 b^3 x}{27 a^2 \left(\frac{a}{a+b x^2}\right)^{2/3} \left(a+b x^2\right)^{7/6} \left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)}+$$

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

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Big/$$

$$\left(9\times 3^{3/4} a^2 x \left(\frac{a}{a+b x^2}\right)^{2/3} \left(a+b x^2\right)^{1/6} \sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)-$$

$$\left(8 \sqrt{2}\, b^2 \left(1-\left(\frac{a}{a+b x^2}\right)^{1/3}\right) \sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Big/$$

$$\left(27\times 3^{1/4} a^2 x \left(\frac{a}{a+b x^2}\right)^{2/3} \left(a+b x^2\right)^{1/6} \sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 94 leaves):

$$\left(-81 a^3+9 a^2 b x^2-30 a b^2 x^4-120 b^3 x^6+\right.$$

$$\left.80 b^3 x^6 \left(1+\frac{b x^2}{a}\right)^{1/6} \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\Big/\left(405 a^3 x^5 \left(a+b x^2\right)^{1/6}\right)$$

Problem 1025: Result unnecessarily involves higher level functions.

$$\int \frac{x^6}{\left(a+b x^2\right)^{5/6}}\, dx$$

Optimal (type 4, 324 leaves, 6 steps):

$$\frac{81\,a^2\,x\,\left(a+b\,x^2\right)^{1/6}}{128\,b^3}-\frac{9\,a\,x^3\,\left(a+b\,x^2\right)^{1/6}}{32\,b^2}+\frac{3\,x^5\,\left(a+b\,x^2\right)^{1/6}}{16\,b}-\left(81\times 3^{3/4}\,\sqrt{2-\sqrt{3}}\;a^3\,\left(a+b\,x^2\right)^{1/6}\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Bigg/\left(128\,b^4\,x\,\left(\frac{a}{a+b\,x^2}\right)^{1/3}\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 89 leaves) :

$$\left(3\,x\,\left(27\,a^3+15\,a^2\,b\,x^2-4\,a\,b^2\,x^4+8\,b^3\,x^6-27\,a^3\,\left(1+\frac{b\,x^2}{a}\right)^{5/6}\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{5}{6},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]\right)\right)\Bigg/\left(128\,b^3\,\left(a+b\,x^2\right)^{5/6}\right)$$

Problem 1026: Result unnecessarily involves higher level functions.

$$\int\frac{x^4}{\left(a+b\,x^2\right)^{5/6}}\,dx$$

Optimal (type 4, 300 leaves, 5 steps) :

$$-\frac{27\,a\,x\,\left(a+b\,x^2\right)^{1/6}}{40\,b^2}+\frac{3\,x^3\,\left(a+b\,x^2\right)^{1/6}}{10\,b}+\left(27\times 3^{3/4}\,\sqrt{2-\sqrt{3}}\;a^2\,\left(a+b\,x^2\right)^{1/6}\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Bigg/\left(40\,b^3\,x\,\left(\frac{a}{a+b\,x^2}\right)^{1/3}\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 79 leaves) :

$$\frac{1}{40\, b^2 \left(a+b\, x^2\right)^{5/6}} 3 \left(-9\, a^2\, x-5\, a\, b\, x^3+4\, b^2\, x^5+9\, a^2\, x \left(1+\frac{b\, x^2}{a}\right)^{5/6} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{3}{2},-\frac{b\, x^2}{a}\right]\right)$$

Problem 1027: Result unnecessarily involves higher level functions.

$$\int \frac{x^2}{\left(a+b\, x^2\right)^{5/6}}\, dx$$

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

$$\frac{3\, x \left(a+b\, x^2\right)^{1/6}}{4\, b}-\left(3\times 3^{3/4} \sqrt{2-\sqrt{3}}\; a \left(a+b\, x^2\right)^{1/6} \left(1-\left(\frac{a}{a+b\, x^2}\right)^{1/3}\right) \sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\; \text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right) \Bigg/ \left(4\, b^2\, x \left(\frac{a}{a+b\, x^2}\right)^{1/3} \sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 62 leaves):

$$\frac{3\, x \left(a+b\, x^2-a \left(1+\frac{b x^2}{a}\right)^{5/6} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{3}{2},-\frac{b x^2}{a}\right]\right)}{4\, b \left(a+b\, x^2\right)^{5/6}}$$

Problem 1028: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\left(a+b\, x^2\right)^{5/6}}\, dx$$

Optimal (type 4, 252 leaves, 3 steps):

$$\left(3^{3/4}\sqrt{2-\sqrt{3}}\,\left(a+b\,x^2\right)^{1/6}\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\sqrt{3}\right]\right)\Big/\left(b\,x\left(\frac{a}{a+b\,x^2}\right)^{1/3}\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 47 leaves):

$$\frac{x\left(\frac{a+b\,x^2}{a}\right)^{5/6}\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{3}{2},-\frac{b\,x^2}{a}\right]}{\left(a+b\,x^2\right)^{5/6}}$$

Problem 1029: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^2\left(a+b\,x^2\right)^{5/6}}\,dx$$

Optimal (type 4, 273 leaves, 4 steps):

$$-\frac{\left(a+b\,x^2\right)^{1/6}}{a\,x}-\left(2\sqrt{2-\sqrt{3}}\,\left(a+b\,x^2\right)^{1/6}\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\sqrt{3}\right]\right)\Big/\left(3^{1/4}\,a\,x\left(\frac{a}{a+b\,x^2}\right)^{1/3}\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 70 leaves):

$$\frac{-3\left(a+b\,x^2\right)-2\,b\,x^2\left(1+\frac{b\,x^2}{a}\right)^{5/6}\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{3}{2},-\frac{b\,x^2}{a}\right]}{3\,a\,x\left(a+b\,x^2\right)^{5/6}}$$

Problem 1030: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^4 \left(a + b x^2\right)^{5/6}} \, dx$$

Optimal (type 4, 300 leaves, 5 steps):

$$-\frac{\left(a + b x^2\right)^{1/6}}{3 a x^3} + \frac{8 b \left(a + b x^2\right)^{1/6}}{9 a^2 x} + \left(16 \sqrt{2 - \sqrt{3}}\ b \left(a + b x^2\right)^{1/6} \left(1 - \left(\frac{a}{a + b x^2}\right)^{1/3}\right) \sqrt{\frac{1 + \left(\frac{a}{a+b x^2}\right)^{1/3} + \left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1 - \sqrt{3} - \left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{1 + \sqrt{3} - \left(\frac{a}{a+b x^2}\right)^{1/3}}{1 - \sqrt{3} - \left(\frac{a}{a+b x^2}\right)^{1/3}}\right], -7 + 4 \sqrt{3}\right]\right) \Bigg/ \left(9 \times 3^{1/4} a^2 x \left(\frac{a}{a + b x^2}\right)^{1/3} \sqrt{-\frac{1 - \left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1 - \sqrt{3} - \left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 83 leaves):

$$\left(-9 a^2 + 15 a b x^2 + 24 b^2 x^4 + 16 b^2 x^4 \left(1 + \frac{b x^2}{a}\right)^{5/6} \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{5}{6}, \frac{3}{2}, -\frac{b x^2}{a}\right]\right) \Bigg/ \left(27 a^2 x^3 \left(a + b x^2\right)^{5/6}\right)$$

Problem 1031: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^6 \left(a + b x^2\right)^{5/6}} \, dx$$

Optimal (type 4, 326 leaves, 6 steps):

$$-\frac{\left(a+b x^2\right)^{1/6}}{5 a x^5}+\frac{14 b \left(a+b x^2\right)^{1/6}}{45 a^2 x^3}-\frac{112 b^2 \left(a+b x^2\right)^{1/6}}{135 a^3 x}-\left(224 \sqrt{2-\sqrt{3}}\; b^2 \left(a+b x^2\right)^{1/6} \left(1-\left(\frac{a}{a+b x^2}\right)^{1/3}\right) \sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Bigg/$$

$$\left(135\times 3^{1/4} a^3 x \left(\frac{a}{a+b x^2}\right)^{1/3} \sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 94 leaves) :

$$\left(-81 a^3+45 a^2 b x^2-210 a b^2 x^4-336 b^3 x^6-\right.$$

$$\left.224 b^3 x^6 \left(1+\frac{b x^2}{a}\right)^{5/6} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\Big/\left(405 a^3 x^5 \left(a+b x^2\right)^{5/6}\right)$$

Problem 1032: Result unnecessarily involves higher level functions.

$$\int \frac{x^6}{\left(a+b x^2\right)^{7/6}}\, dx$$

Optimal (type 4, 654 leaves, 9 steps) :

$$\frac{1215\,a^2\,x}{224\,b^3\,\left(a+b\,x^2\right)^{1/6}}-\frac{3\,x^5}{b\,\left(a+b\,x^2\right)^{1/6}}-\frac{405\,a\,x\,\left(a+b\,x^2\right)^{5/6}}{112\,b^3}+$$

$$\frac{45\,x^3\,\left(a+b\,x^2\right)^{5/6}}{14\,b^2}+\frac{1215\,a^3\,x}{224\,b^3\,\left(\frac{a}{a+b\,x^2}\right)^{2/3}\,\left(a+b\,x^2\right)^{7/6}\,\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)}+$$

$$\left(1215\times 3^{1/4}\,\sqrt{2+\sqrt{3}}\;a^3\,\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\,\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Bigg/$$

$$\left(448\,b^4\,x\,\left(\frac{a}{a+b\,x^2}\right)^{2/3}\,\left(a+b\,x^2\right)^{1/6}\,\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)-$$

$$\left(405\times 3^{3/4}\,a^3\,\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\,\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Bigg/$$

$$\left(112\,\sqrt{2}\,b^4\,x\,\left(\frac{a}{a+b\,x^2}\right)^{2/3}\,\left(a+b\,x^2\right)^{1/6}\,\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 79 leaves):

$$\left(3\,\left(-135\,a^2\,x-15\,a\,b\,x^3+8\,b^2\,x^5+135\,a^2\,x\,\left(1+\frac{b\,x^2}{a}\right)^{1/6}\,\text{Hypergeometric2F1}\left[\frac{1}{6},\,\frac{1}{2},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]\right)\right)\Big/$$

$$\left(112\,b^3\,\left(a+b\,x^2\right)^{1/6}\right)$$

Problem 1033: Result unnecessarily involves higher level functions.

$$\int\frac{x^4}{\left(a+b\,x^2\right)^{7/6}}\,dx$$

Optimal (type 4, 630 leaves, 8 steps):

$$-\frac{81\,a\,x}{16\,b^2\,\left(a+b\,x^2\right)^{1/6}}-\frac{3\,x^3}{b\,\left(a+b\,x^2\right)^{1/6}}+\frac{27\,x\,\left(a+b\,x^2\right)^{5/6}}{8\,b^2}-\frac{81\,a^2\,x}{16\,b^2\,\left(\frac{a}{a+b\,x^2}\right)^{2/3}\,\left(a+b\,x^2\right)^{7/6}\,\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)}-$$

$$\left(81\times 3^{1/4}\,\sqrt{2+\sqrt{3}}\,a^2\,\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\,\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],-7+4\,\sqrt{3}\right]\right)\Big/$$

$$\left(32\,b^3\,x\,\left(\frac{a}{a+b\,x^2}\right)^{2/3}\,\left(a+b\,x^2\right)^{1/6}\,\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)+$$

$$\left(27\times 3^{3/4}\,a^2\,\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\,\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],-7+4\,\sqrt{3}\right]\right)\Big/$$

$$\left(8\,\sqrt{2}\,b^3\,x\,\left(\frac{a}{a+b\,x^2}\right)^{2/3}\,\left(a+b\,x^2\right)^{1/6}\,\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 64 leaves):

$$\frac{3\,x\,\left(9\,a+b\,x^2-9\,a\,\left(1+\frac{b\,x^2}{a}\right)^{1/6}\,\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{3}{2},-\frac{b\,x^2}{a}\right]\right)}{8\,b^2\,\left(a+b\,x^2\right)^{1/6}}$$

Problem 1034: Result unnecessarily involves higher level functions.

$$\int\frac{x^2}{\left(a+b\,x^2\right)^{7/6}}\,dx$$

Optimal (type 4, 583 leaves, 7 steps):

$$\frac{3\,x}{2\,b\,\left(a+b\,x^2\right)^{1/6}}+\frac{9\,a\,x}{2\,b\,\left(\frac{a}{a+b\,x^2}\right)^{2/3}\,\left(a+b\,x^2\right)^{7/6}\,\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)}+$$

$$\left(9\times 3^{1/4}\,\sqrt{2+\sqrt{3}}\;a\,\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Bigg/$$

$$\left(4\,b^2\,x\,\left(\frac{a}{a+b\,x^2}\right)^{2/3}\,\left(a+b\,x^2\right)^{1/6}\,\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)-$$

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

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Bigg/$$

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

Result (type 5, 53 leaves):

$$\frac{3\,x\,\left(-1+\left(1+\frac{b\,x^2}{a}\right)^{1/6}\,\text{Hypergeometric2F1}\left[\frac{1}{6},\,\frac{1}{2},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]\right)}{b\,\left(a+b\,x^2\right)^{1/6}}$$

Problem 1035: Result unnecessarily involves higher level functions.

$$\int\frac{1}{\left(a+b\,x^2\right)^{7/6}}\,dx$$

Optimal (type 4, 555 leaves, 5 steps):

$$-\frac{3\,x}{\left(\frac{a}{a+b\,x^2}\right)^{2/3}\left(a+b\,x^2\right)^{7/6}\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)}-$$

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

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\sqrt{3}\right]\right)\bigg/$$

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

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

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\sqrt{3}\right]\right)\bigg/$$

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

Result (type 5, 55 leaves):

$$\frac{3\,x-2\,x\left(1+\frac{b\,x^2}{a}\right)^{1/6}\text{Hypergeometric2F1}\left[\frac{1}{6},\,\frac{1}{2},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]}{a\left(a+b\,x^2\right)^{1/6}}$$

Problem 1036: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^2\left(a+b\,x^2\right)^{7/6}}\,dx$$

Optimal (type 4, 614 leaves, 8 steps):

$$\frac{3}{a\,x\,\left(a+b\,x^2\right)^{1/6}}+\frac{4\,b\,x}{a^2\,\left(a+b\,x^2\right)^{1/6}}-\frac{4\,\left(a+b\,x^2\right)^{5/6}}{a^2\,x}+$$

$$\frac{4\,b\,x}{a\,\left(\frac{a}{a+b\,x^2}\right)^{2/3}\,\left(a+b\,x^2\right)^{7/6}\,\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)}+\left(2\times 3^{1/4}\,\sqrt{2+\sqrt{3}}\,\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\right.$$

$$\left.\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\;\text{EllipticE}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Big/$$

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

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

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],\,-7+4\,\sqrt{3}\right]\right)\Big/$$

$$\left(3^{1/4}\,a\,x\,\left(\frac{a}{a+b\,x^2}\right)^{2/3}\,\left(a+b\,x^2\right)^{1/6}\,\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 71 leaves):

$$\left(-3\,\left(a+4\,b\,x^2\right)+8\,b\,x^2\,\left(1+\frac{b\,x^2}{a}\right)^{1/6}\,\text{Hypergeometric2F1}\left[\frac{1}{6},\,\frac{1}{2},\,\frac{3}{2},\,-\frac{b\,x^2}{a}\right]\right)\Big/\left(3\,a^2\,x\,\left(a+b\,x^2\right)^{1/6}\right)$$

Problem 1037: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^4\,\left(a+b\,x^2\right)^{7/6}}\,dx$$

Optimal (type 4, 652 leaves, 9 steps):

$$\frac{3}{a x^3 \left(a+b x^2\right)^{1/6}}-\frac{40 b^2 x}{9 a^3 \left(a+b x^2\right)^{1/6}}-\frac{10 \left(a+b x^2\right)^{5/6}}{3 a^2 x^3}+\frac{40 b \left(a+b x^2\right)^{5/6}}{9 a^3 x}-\frac{40 b^2 x}{9 a^2 \left(\frac{a}{a+b x^2}\right)^{2/3} \left(a+b x^2\right)^{7/6} \left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)}-$$

$$\left(20 \sqrt{2+\sqrt{3}}\, b \left(1-\left(\frac{a}{a+b x^2}\right)^{1/3}\right) \sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Bigg/$$

$$\left(3\times 3^{3/4} a^2 x \left(\frac{a}{a+b x^2}\right)^{2/3} \left(a+b x^2\right)^{1/6} \sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)+$$

$$\left(40 \sqrt{2}\, b \left(1-\left(\frac{a}{a+b x^2}\right)^{1/3}\right) \sqrt{\frac{1+\left(\frac{a}{a+b x^2}\right)^{1/3}+\left(\frac{a}{a+b x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}}\right],-7+4 \sqrt{3}\right]\right)\Bigg/$$

$$\left(9\times 3^{1/4} a^2 x \left(\frac{a}{a+b x^2}\right)^{2/3} \left(a+b x^2\right)^{1/6} \sqrt{-\frac{1-\left(\frac{a}{a+b x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b x^2}\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 83 leaves) :

$$\left(-9 a^2+30 a b x^2+120 b^2 x^4-80 b^2 x^4 \left(1+\frac{b x^2}{a}\right)^{1/6} \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{3}{2},-\frac{b x^2}{a}\right]\right)\Big/ \left(27 a^3 x^3 \left(a+b x^2\right)^{1/6}\right)$$

Problem 1038: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^6 \left(a+b x^2\right)^{7/6}}\, dx$$

Optimal (type 4, 680 leaves, 10 steps) :

$$\frac{3}{a\,x^5\left(a+b\,x^2\right)^{1/6}}+\frac{128\,b^3\,x}{27\,a^4\left(a+b\,x^2\right)^{1/6}}-\frac{16\left(a+b\,x^2\right)^{5/6}}{5\,a^2\,x^5}+\frac{32\,b\left(a+b\,x^2\right)^{5/6}}{9\,a^3\,x^3}-\frac{128\,b^2\left(a+b\,x^2\right)^{5/6}}{27\,a^4\,x}+\frac{128\,b^3\,x}{27\,a^3\left(\frac{a}{a+b\,x^2}\right)^{2/3}\left(a+b\,x^2\right)^{7/6}\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)}+$$

$$\left(64\sqrt{2+\sqrt{3}}\;b^2\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Big/$$

$$\left(9\times 3^{3/4}\,a^3\,x\left(\frac{a}{a+b\,x^2}\right)^{2/3}\left(a+b\,x^2\right)^{1/6}\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)-$$

$$\left(128\sqrt{2}\;b^2\left(1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)\sqrt{\frac{1+\left(\frac{a}{a+b\,x^2}\right)^{1/3}+\left(\frac{a}{a+b\,x^2}\right)^{2/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1+\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}\right],-7+4\sqrt{3}\right]\right)\Big/$$

$$\left(27\times 3^{1/4}\,a^3\,x\left(\frac{a}{a+b\,x^2}\right)^{2/3}\left(a+b\,x^2\right)^{1/6}\sqrt{-\frac{1-\left(\frac{a}{a+b\,x^2}\right)^{1/3}}{\left(1-\sqrt{3}-\left(\frac{a}{a+b\,x^2}\right)^{1/3}\right)^2}}\right)$$

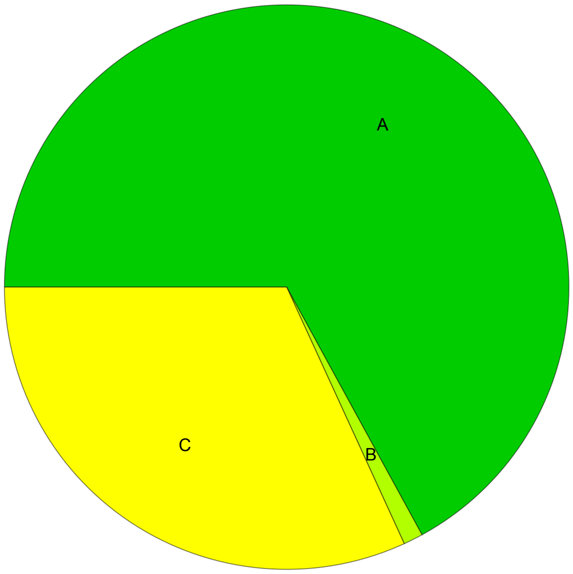
Result (type 5, 97 leaves) :

$$\left(-3\left(27\,a^3-48\,a^2\,b\,x^2+160\,a\,b^2\,x^4+640\,b^3\,x^6\right)+\right.$$

$$\left.1280\,b^3\,x^6\left(1+\frac{b\,x^2}{a}\right)^{1/6}\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{3}{2},-\frac{b\,x^2}{a}\right]\right)\Big/\left(405\,a^4\,x^5\left(a+b\,x^2\right)^{1/6}\right)$$

Summary of Integration Test Results

1071 integration problems



A - 718 optimal antiderivatives

B - 12 more than twice size of optimal antiderivatives

C - 341 unnecessarily complex antiderivatives

D - 0 unable to integrate problems

E - 0 integration timeouts