Mathematica 11.3 Integration Test Results

Test results for the 3189 problems in "1.1.1.3 (a+b x)^m (c+d x)^n (e+f x)^p.m"

Problem 6: Result more than twice size of optimal antiderivative.

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

Optimal (type 1, 18 leaves, 1 step):

$$-\frac{c^3\,(a-b x)^4}{2 x^2}$$

Result (type 1, 41 leaves):

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

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

$$\int \frac{(a+b x)\,(a c-b c x)^4}{x^7}\,dx$$

Optimal (type 1, 41 leaves, 2 steps):

$$-\frac{c^4\,(a-b x)^5}{6 x^6}-\frac{7 b c^4\,(a-b x)^5}{30 a x^5}$$

Result (type 1, 85 leaves):

$$-\frac{a^5 c^4}{6 x^6}+\frac{3 a^4 b c^4}{5 x^5}-\frac{a^3 b^2 c^4}{2 x^4}-\frac{2 a^2 b^3 c^4}{3 x^3}+\frac{3 a b^4 c^4}{2 x^2}-\frac{b^5 c^4}{x}$$

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

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

Optimal (type 1, 18 leaves, 1 step):

$$-\frac{c^5\,(a-b x)^6}{3 x^3}$$

Result (type 1, 63 leaves):

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

Problem 44: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)\,(a c-b c x)^6}{x^9}\,dx$$

Optimal (type 1, 41 leaves, 2 steps):

$$-\frac{c^6 (a-b x)^7}{8 x^8}-\frac{9 b c^6 (a-b x)^7}{56 a x^7}$$

Result (type 1, 112 leaves):

$$-\frac{a^7 c^6}{8 x^8}+\frac{5 a^6 b c^6}{7 x^7}-\frac{3 a^5 b^2 c^6}{2 x^6}+\frac{a^4 b^3 c^6}{x^5}+\frac{5 a^3 b^4 c^6}{4 x^4}-\frac{3 a^2 b^5 c^6}{x^3}+\frac{5 a b^6 c^6}{2 x^2}-\frac{b^7 c^6}{x}$$

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

$$\int (a+b x)^5 (A+B x)\,dx$$

Optimal (type 1, 38 leaves, 2 steps):

$$\frac{(A b-a B)\,(a+b x)^6}{6 b^2}+\frac{B\,(a+b x)^7}{7 b^2}$$

Result (type 1, 109 leaves):

$$a^5 A x+\frac{1}{2} a^4 (5 A b+a B) x^2+\frac{5}{3} a^3 b (2 A b+a B) x^3+\frac{5}{2} a^2 b^2 (A b+a B) x^4+a b^3 (A b+2 a B) x^5+\frac{1}{6} b^4 (A b+5 a B) x^6+\frac{1}{7} b^5 B x^7$$

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

$$\int \frac{(a+b x)^5 (A+B x)}{x^8}\,dx$$

Optimal (type 1, 44 leaves, 2 steps):

$$-\frac{A (a+b x)^6}{7 a x^7}+\frac{(A b-7 a B)\,(a+b x)^6}{42 a^2 x^6}$$

Result (type 1, 104 leaves):

$$-\frac{1}{42 x^7}\left(21 b^5 x^5 (A+2 B x)+35 a b^4 x^4 (2 A+3 B x)+35 a^2 b^3 x^3 (3 A+4 B x)+21 a^3 b^2 x^2 (4 A+5 B x)+7 a^4 b x (5 A+6 B x)+a^5 (6 A+7 B x)\right)$$

Problem 113: Result more than twice size of optimal antiderivative.

$$\int x^3 (a+b x)^{10} (A+B x) \, dx$$

Optimal (type 1, 112 leaves, 2 steps):

$$-\frac{a^3 (A b-a B) (a+b x)^{11}}{11 b^5}+\frac{a^2 (3 A b-4 a B) (a+b x)^{12}}{12 b^5}-\frac{3 a (A b-2 a B) (a+b x)^{13}}{13 b^5}+\frac{(A b-4 a B) (a+b x)^{14}}{14 b^5}+\frac{B (a+b x)^{15}}{15 b^5}$$

Result (type 1, 231 leaves):

$$\frac{1}{4} a^{10} A x^4+\frac{1}{5} a^9 (10 A b+a B) x^5+\frac{5}{6} a^8 b (9 A b+2 a B) x^6+\frac{15}{7} a^7 b^2 (8 A b+3 a B) x^7+\frac{15}{4} a^6 b^3 (7 A b+4 a B) x^8+\frac{14}{3} a^5 b^4 (6 A b+5 a B) x^9+\frac{21}{5} a^4 b^5 (5 A b+6 a B) x^{10}+\frac{30}{11} a^3 b^6 (4 A b+7 a B) x^{11}+\frac{5}{4} a^2 b^7 (3 A b+8 a B) x^{12}+\frac{5}{13} a b^8 (2 A b+9 a B) x^{13}+\frac{1}{14} b^9 (A b+10 a B) x^{14}+\frac{1}{15} b^{10} B x^{15}$$

Problem 114: Result more than twice size of optimal antiderivative.

$$\int x^2 (a+b x)^{10} (A+B x) \, dx$$

Optimal (type 1, 87 leaves, 2 steps):

$$\frac{a^2 (A b-a B) (a+b x)^{11}}{11 b^4}-\frac{a (2 A b-3 a B) (a+b x)^{12}}{12 b^4}+\frac{(A b-3 a B) (a+b x)^{13}}{13 b^4}+\frac{B (a+b x)^{14}}{14 b^4}$$

Result (type 1, 226 leaves):

$$\frac{1}{3} a^{10} A x^3+\frac{1}{4} a^9 (10 A b+a B) x^4+a^8 b (9 A b+2 a B) x^5+\frac{5}{2} a^7 b^2 (8 A b+3 a B) x^6+\frac{30}{7} a^6 b^3 (7 A b+4 a B) x^7+\frac{21}{4} a^5 b^4 (6 A b+5 a B) x^8+\frac{14}{3} a^4 b^5 (5 A b+6 a B) x^9+3 a^3 b^6 (4 A b+7 a B) x^{10}+\frac{15}{11} a^2 b^7 (3 A b+8 a B) x^{11}+\frac{5}{12} a b^8 (2 A b+9 a B) x^{12}+\frac{1}{13} b^9 (A b+10 a B) x^{13}+\frac{1}{14} b^{10} B x^{14}$$

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

$$\int x (a+b x)^{10} (A+B x) \, dx$$

Optimal (type 1, 61 leaves, 2 steps):

$$-\frac{a (A b-a B) (a+b x)^{11}}{11 b^3}+\frac{(A b-2 a B) (a+b x)^{12}}{12 b^3}+\frac{B (a+b x)^{13}}{13 b^3}$$

Result (type 1, 218 leaves):

$$\frac{1}{6} a^{10} x^2 (3 A+2 B x)+\frac{5}{6} a^9 b x^3 (4 A+3 B x)+\frac{9}{4} a^8 b^2 x^4 (5 A+4 B x)+4 a^7 b^3 x^5 (6 A+5 B x)+5 a^6 b^4 x^6 (7 A+6 B x)+\frac{9}{2} a^5 b^5 x^7 (8 A+7 B x)+\frac{35}{12} a^4 b^6 x^8 (9 A+8 B x)+\frac{4}{3} a^3 b^7 x^9 (10 A+9 B x)+\frac{9}{22} a^2 b^8 x^{10} (11 A+10 B x)+\frac{5}{66} a b^9 x^{11} (12 A+11 B x)+\frac{1}{156} b^{10} x^{12} (13 A+12 B x)$$

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

$$\int (a+b x)^{10} (A+B x) \, dx$$

Optimal (type 1, 38 leaves, 2 steps):

$$\frac{(A b-a B) (a+b x)^{11}}{11 b^2}+\frac{B (a+b x)^{12}}{12 b^2}$$

Result (type 1, 198 leaves):

$$\frac{1}{132} x \left(66 a^{10} (2 A+B x)+220 a^9 b x (3 A+2 B x)+495 a^8 b^2 x^2 (4 A+3 B x)+792 a^7 b^3 x^3 (5 A+4 B x)+924 a^6 b^4 x^4 (6 A+5 B x)+792 a^5 b^5 x^5 (7 A+6 B x)+495 a^4 b^6 x^6 (8 A+7 B x)+220 a^3 b^7 x^7 (9 A+8 B x)+66 a^2 b^8 x^8 (10 A+9 B x)+12 a b^9 x^9 (11 A+10 B x)+b^{10} x^{10} (12 A+11 B x)\right)$$

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

$$\int \frac{(a+b x)^{10} (A+B x)}{x^{13}} \, dx$$

Optimal (type 1, 44 leaves, 2 steps):

$$-\frac{A (a+b x)^{11}}{12 a x^{12}}+\frac{(A b-12 a B) (a+b x)^{11}}{132 a^2 x^{11}}$$

Result (type 1, 199 leaves):

$$-\frac{1}{132 x^{12}} \left(66 b^{10} x^{10} (A+2 B x)+220 a b^9 x^9 (2 A+3 B x)+495 a^2 b^8 x^8 (3 A+4 B x)+792 a^3 b^7 x^7 (4 A+5 B x)+924 a^4 b^6 x^6 (5 A+6 B x)+792 a^5 b^5 x^5 (6 A+7 B x)+495 a^6 b^4 x^4 (7 A+8 B x)+220 a^7 b^3 x^3 (8 A+9 B x)+66 a^8 b^2 x^2 (9 A+10 B x)+12 a^9 b x (10 A+11 B x)+a^{10} (11 A+12 B x)\right)$$

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

$$\int \frac{(a+b x)^{10} (A+B x)}{x^{14}} \, dx$$

Optimal (type 1, 72 leaves, 3 steps):

$$-\frac{A\,(a+b\,x)^{11}}{13\,a\,x^{13}}+\frac{(2\,A\,b-13\,a\,B)\,(a+b\,x)^{11}}{156\,a^2\,x^{12}}-\frac{b\,(2\,A\,b-13\,a\,B)\,(a+b\,x)^{11}}{1716\,a^3\,x^{11}}$$

Result (type 1, 202 leaves):

$$-\frac{1}{1716\,x^{13}}\left(286\,b^{10}\,x^{10}\,(2\,A+3\,B\,x)+1430\,a\,b^9\,x^9\,(3\,A+4\,B\,x)+3861\,a^2\,b^8\,x^8\,(4\,A+5\,B\,x)+6864\,a^3\,b^7\,x^7\,(5\,A+6\,B\,x)+8580\,a^4\,b^6\,x^6\,(6\,A+7\,B\,x)+7722\,a^5\,b^5\,x^5\,(7\,A+8\,B\,x)+5005\,a^6\,b^4\,x^4\,(8\,A+9\,B\,x)+2288\,a^7\,b^3\,x^3\,(9\,A+10\,B\,x)+702\,a^8\,b^2\,x^2\,(10\,A+11\,B\,x)+130\,a^9\,b\,x\,(11\,A+12\,B\,x)+11\,a^{10}\,(12\,A+13\,B\,x)\right)$$

Problem 138: Result more than twice size of optimal antiderivative.

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

Optimal (type 1, 114 leaves, 2 steps):

$$\frac{c^3\,(b\,c-a\,d)\,(c+d\,x)^{17}}{17\,d^5}-\frac{c^2\,(4\,b\,c-3\,a\,d)\,(c+d\,x)^{18}}{18\,d^5}+\frac{3\,c\,(2\,b\,c-a\,d)\,(c+d\,x)^{19}}{19\,d^5}-\frac{(4\,b\,c-a\,d)\,(c+d\,x)^{20}}{20\,d^5}+\frac{b\,(c+d\,x)^{21}}{21\,d^5}$$

Result (type 1, 359 leaves):

$$\frac{1}{4}\,a\,c^{16}\,x^4+\frac{1}{5}\,c^{15}\,(b\,c+16\,a\,d)\,x^5+\frac{4}{3}\,c^{14}\,d\,(2\,b\,c+15\,a\,d)\,x^6+\frac{40}{7}\,c^{13}\,d^2\,(3\,b\,c+14\,a\,d)\,x^7+\frac{35}{2}\,c^{12}\,d^3\,(4\,b\,c+13\,a\,d)\,x^8+\frac{364}{9}\,c^{11}\,d^4\,(5\,b\,c+12\,a\,d)\,x^9+\frac{364}{5}\,c^{10}\,d^5\,(6\,b\,c+11\,a\,d)\,x^{10}+104\,c^9\,d^6\,(7\,b\,c+10\,a\,d)\,x^{11}+\frac{715}{6}\,c^8\,d^7\,(8\,b\,c+9\,a\,d)\,x^{12}+110\,c^7\,d^8\,(9\,b\,c+8\,a\,d)\,x^{13}+\frac{572}{7}\,c^6\,d^9\,(10\,b\,c+7\,a\,d)\,x^{14}+\frac{728}{15}\,c^5\,d^{10}\,(11\,b\,c+6\,a\,d)\,x^{15}+\frac{91}{4}\,c^4\,d^{11}\,(12\,b\,c+5\,a\,d)\,x^{16}+\frac{140}{17}\,c^3\,d^{12}\,(13\,b\,c+4\,a\,d)\,x^{17}+\frac{20}{9}\,c^2\,d^{13}\,(14\,b\,c+3\,a\,d)\,x^{18}+\frac{8}{19}\,c\,d^{14}\,(15\,b\,c+2\,a\,d)\,x^{19}+\frac{1}{20}\,d^{15}\,(16\,b\,c+a\,d)\,x^{20}+\frac{1}{21}\,b\,d^{16}\,x^{21}$$

Problem 139: Result more than twice size of optimal antiderivative.

$$\int x^2\,(a+b\,x)\,(c+d\,x)^{16}\,dx$$

Optimal (type 1, 88 leaves, 2 steps):

$$-\frac{c^2\,(b\,c-a\,d)\,(c+d\,x)^{17}}{17\,d^4}+\frac{c\,(3\,b\,c-2\,a\,d)\,(c+d\,x)^{18}}{18\,d^4}-\frac{(3\,b\,c-a\,d)\,(c+d\,x)^{19}}{19\,d^4}+\frac{b\,(c+d\,x)^{20}}{20\,d^4}$$

Result (type 1, 355 leaves):

$$\frac{1}{3} a c^{16} x^3 + \frac{1}{4} c^{15} (b c + 16 a d) x^4 + \frac{8}{5} c^{14} d (2 b c + 15 a d) x^5 + \frac{20}{3} c^{13} d^2 (3 b c + 14 a d) x^6 + 20 c^{12} d^3 (4 b c + 13 a d) x^7 + \frac{91}{2} c^{11} d^4 (5 b c + 12 a d) x^8 + \frac{728}{9} c^{10} d^5 (6 b c + 11 a d) x^9 + \frac{572}{5} c^9 d^6 (7 b c + 10 a d) x^{10} + 130 c^8 d^7 (8 b c + 9 a d) x^{11} + \frac{715}{6} c^7 d^8 (9 b c + 8 a d) x^{12} + 88 c^6 d^9 (10 b c + 7 a d) x^{13} + 52 c^5 d^{10} (11 b c + 6 a d) x^{14} + \frac{364}{15} c^4 d^{11} (12 b c + 5 a d) x^{15} + \frac{35}{4} c^3 d^{12} (13 b c + 4 a d) x^{16} + \frac{40}{17} c^2 d^{13} (14 b c + 3 a d) x^{17} + \frac{4}{9} c d^{14} (15 b c + 2 a d) x^{18} + \frac{1}{19} d^{15} (16 b c + a d) x^{19} + \frac{1}{20} b d^{16} x^{20}$$

Problem 140: Result more than twice size of optimal antiderivative.

$$\int x (a + b x) (c + d x)^{16} \, dx$$

Optimal (type 1, 62 leaves, 2 steps):

$$\frac{c (b c - a d) (c + d x)^{17}}{17 d^3} - \frac{(2 b c - a d) (c + d x)^{18}}{18 d^3} + \frac{b (c + d x)^{19}}{19 d^3}$$

Result (type 1, 347 leaves):

$$\frac{1}{2} a c^{16} x^2 + \frac{1}{3} c^{15} (b c + 16 a d) x^3 + 2 c^{14} d (2 b c + 15 a d) x^4 + 8 c^{13} d^2 (3 b c + 14 a d) x^5 + \frac{70}{3} c^{12} d^3 (4 b c + 13 a d) x^6 + 52 c^{11} d^4 (5 b c + 12 a d) x^7 + 91 c^{10} d^5 (6 b c + 11 a d) x^8 + \frac{1144}{9} c^9 d^6 (7 b c + 10 a d) x^9 + 143 c^8 d^7 (8 b c + 9 a d) x^{10} + 130 c^7 d^8 (9 b c + 8 a d) x^{11} + \frac{286}{3} c^6 d^9 (10 b c + 7 a d) x^{12} + 56 c^5 d^{10} (11 b c + 6 a d) x^{13} + 26 c^4 d^{11} (12 b c + 5 a d) x^{14} + \frac{28}{3} c^3 d^{12} (13 b c + 4 a d) x^{15} + \frac{5}{2} c^2 d^{13} (14 b c + 3 a d) x^{16} + \frac{8}{17} c d^{14} (15 b c + 2 a d) x^{17} + \frac{1}{18} d^{15} (16 b c + a d) x^{18} + \frac{1}{19} b d^{16} x^{19}$$

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

$$\int (a + b x) (c + d x)^{16} \, dx$$

Optimal (type 1, 38 leaves, 2 steps):

$$-\frac{(b c - a d) (c + d x)^{17}}{17 d^2} + \frac{b (c + d x)^{18}}{18 d^2}$$

Result (type 1, 342 leaves):

$$a c^{16} x + \frac{1}{2} c^{15} (b c + 16 a d) x^2 + \frac{8}{3} c^{14} d (2 b c + 15 a d) x^3 +$$
$$10 c^{13} d^2 (3 b c + 14 a d) x^4 + 28 c^{12} d^3 (4 b c + 13 a d) x^5 + \frac{182}{3} c^{11} d^4 (5 b c + 12 a d) x^6 +$$
$$104 c^{10} d^5 (6 b c + 11 a d) x^7 + 143 c^9 d^6 (7 b c + 10 a d) x^8 + \frac{1430}{9} c^8 d^7 (8 b c + 9 a d) x^9 +$$
$$143 c^7 d^8 (9 b c + 8 a d) x^{10} + 104 c^6 d^9 (10 b c + 7 a d) x^{11} + \frac{182}{3} c^5 d^{10} (11 b c + 6 a d) x^{12} +$$
$$28 c^4 d^{11} (12 b c + 5 a d) x^{13} + 10 c^3 d^{12} (13 b c + 4 a d) x^{14} + \frac{8}{3} c^2 d^{13} (14 b c + 3 a d) x^{15} +$$
$$\frac{1}{2} c d^{14} (15 b c + 2 a d) x^{16} + \frac{1}{17} d^{15} (16 b c + a d) x^{17} + \frac{1}{18} b d^{16} x^{18}$$

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

$$\int x^2 (2 + x)^5 (2 + 3 x) \, dx$$

Optimal (type 1, 12 leaves, 1 step):

$$\frac{1}{3} x^3 (2 + x)^6$$

Result (type 1, 42 leaves):

$$\frac{64 x^3}{3} + 64 x^4 + 80 x^5 + \frac{160 x^6}{3} + 20 x^7 + 4 x^8 + \frac{x^9}{3}$$

Problem 171: Result more than twice size of optimal antiderivative.

$$\int x^3 (a + b x)^2 (c + d x)^{16} \, dx$$

Optimal (type 1, 177 leaves, 2 steps):

$$-\frac{c^3 (b c - a d)^2 (c + d x)^{17}}{17 d^6} + \frac{c^2 (5 b c - 3 a d) (b c - a d) (c + d x)^{18}}{18 d^6} -$$
$$\frac{c (10 b^2 c^2 - 12 a b c d + 3 a^2 d^2) (c + d x)^{19}}{19 d^6} +$$
$$\frac{(10 b^2 c^2 - 8 a b c d + a^2 d^2) (c + d x)^{20}}{20 d^6} - \frac{b (5 b c - 2 a d) (c + d x)^{21}}{21 d^6} + \frac{b^2 (c + d x)^{22}}{22 d^6}$$

Result (type 1, 589 leaves):

$$\frac{1}{4} a^2 c^{16} x^4 + \frac{2}{5} a c^{15} (b c + 8 a d) x^5 +$$
$$\frac{1}{6} c^{14} (b^2 c^2 + 32 a b c d + 120 a^2 d^2) x^6 + \frac{16}{7} c^{13} d (b^2 c^2 + 15 a b c d + 35 a^2 d^2) x^7 +$$
$$\frac{5}{2} c^{12} d^2 (6 b^2 c^2 + 56 a b c d + 91 a^2 d^2) x^8 + \frac{56}{9} c^{11} d^3 (10 b^2 c^2 + 65 a b c d + 78 a^2 d^2) x^9 +$$
$$\frac{182}{5} c^{10} d^4 (5 b^2 c^2 + 24 a b c d + 22 a^2 d^2) x^{10} + \frac{208}{11} c^9 d^5 (21 b^2 c^2 + 77 a b c d + 55 a^2 d^2) x^{11} +$$
$$\frac{143}{6} c^8 d^6 (28 b^2 c^2 + 80 a b c d + 45 a^2 d^2) x^{12} + 220 c^7 d^7 (4 b^2 c^2 + 9 a b c d + 4 a^2 d^2) x^{13} +$$
$$\frac{143}{7} c^6 d^8 (45 b^2 c^2 + 80 a b c d + 28 a^2 d^2) x^{14} + \frac{208}{15} c^5 d^9 (55 b^2 c^2 + 77 a b c d + 21 a^2 d^2) x^{15} +$$
$$\frac{91}{4} c^4 d^{10} (22 b^2 c^2 + 24 a b c d + 5 a^2 d^2) x^{16} + \frac{56}{17} c^3 d^{11} (78 b^2 c^2 + 65 a b c d + 10 a^2 d^2) x^{17} +$$
$$\frac{10}{9} c^2 d^{12} (91 b^2 c^2 + 56 a b c d + 6 a^2 d^2) x^{18} + \frac{16}{19} c d^{13} (35 b^2 c^2 + 15 a b c d + a^2 d^2) x^{19} +$$
$$\frac{1}{20} d^{14} (120 b^2 c^2 + 32 a b c d + a^2 d^2) x^{20} + \frac{2}{21} b d^{15} (8 b c + a d) x^{21} + \frac{1}{22} b^2 d^{16} x^{22}$$

Problem 172: Result more than twice size of optimal antiderivative.

$$\int x^2 (a + b x)^2 (c + d x)^{16} \, dx$$

Optimal (type 1, 137 leaves, 2 steps):

$$\frac{c^2 (b c - a d)^2 (c + d x)^{17}}{17 d^5} - \frac{c (b c - a d) (2 b c - a d) (c + d x)^{18}}{9 d^5} +$$
$$\frac{(6 b^2 c^2 - 6 a b c d + a^2 d^2) (c + d x)^{19}}{19 d^5} - \frac{b (2 b c - a d) (c + d x)^{20}}{10 d^5} + \frac{b^2 (c + d x)^{21}}{21 d^5}$$

Result (type 1, 585 leaves):

$$\frac{1}{3} a^2 c^{16} x^3 + \frac{1}{2} a c^{15} (b c + 8 a d) x^4 + \frac{1}{5} c^{14} (b^2 c^2 + 32 a b c d + 120 a^2 d^2) x^5 + \frac{8}{3} c^{13} d (b^2 c^2 + 15 a b c d + 35 a^2 d^2) x^6 + \frac{20}{7} c^{12} d^2 (6 b^2 c^2 + 56 a b c d + 91 a^2 d^2) x^7 + 7 c^{11} d^3 (10 b^2 c^2 + 65 a b c d + 78 a^2 d^2) x^8 + \frac{364}{9} c^{10} d^4 (5 b^2 c^2 + 24 a b c d + 22 a^2 d^2) x^9 + \frac{104}{5} c^9 d^5 (21 b^2 c^2 + 77 a b c d + 55 a^2 d^2) x^{10} + 26 c^8 d^6 (28 b^2 c^2 + 80 a b c d + 45 a^2 d^2) x^{11} + \frac{715}{3} c^7 d^7 (4 b^2 c^2 + 9 a b c d + 4 a^2 d^2) x^{12} + 22 c^6 d^8 (45 b^2 c^2 + 80 a b c d + 28 a^2 d^2) x^{13} + \frac{104}{7} c^5 d^9 (55 b^2 c^2 + 77 a b c d + 21 a^2 d^2) x^{14} + \frac{364}{15} c^4 d^{10} (22 b^2 c^2 + 24 a b c d + 5 a^2 d^2) x^{15} + \frac{7}{2} c^3 d^{11} (78 b^2 c^2 + 65 a b c d + 10 a^2 d^2) x^{16} + \frac{20}{17} c^2 d^{12} (91 b^2 c^2 + 56 a b c d + 6 a^2 d^2) x^{17} + \frac{8}{9} c d^{13} (35 b^2 c^2 + 15 a b c d + a^2 d^2) x^{18} + \frac{1}{19} d^{14} (120 b^2 c^2 + 32 a b c d + a^2 d^2) x^{19} + \frac{1}{10} b d^{15} (8 b c + a d) x^{20} + \frac{1}{21} b^2 d^{16} x^{21}$$

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

$$\int x (a + b x)^2 (c + d x)^{16} \, dx$$

Optimal (type 1, 98 leaves, 2 steps):

$$-\frac{c (b c - a d)^2 (c + d x)^{17}}{17 d^4} + \frac{(b c - a d) (3 b c - a d) (c + d x)^{18}}{18 d^4} - \frac{b (3 b c - 2 a d) (c + d x)^{19}}{19 d^4} + \frac{b^2 (c + d x)^{20}}{20 d^4}$$

Result (type 1, 583 leaves):

$$\frac{1}{2} a^2 c^{16} x^2 + \frac{2}{3} a c^{15} (b c + 8 a d) x^3 + \frac{1}{4} c^{14} \left(b^2 c^2 + 32 a b c d + 120 a^2 d^2\right) x^4 + \frac{16}{5} c^{13} d \left(b^2 c^2 + 15 a b c d + 35 a^2 d^2\right) x^5 + \frac{10}{3} c^{12} d^2 \left(6 b^2 c^2 + 56 a b c d + 91 a^2 d^2\right) x^6 + 8 c^{11} d^3 \left(10 b^2 c^2 + 65 a b c d + 78 a^2 d^2\right) x^7 + \frac{91}{2} c^{10} d^4 \left(5 b^2 c^2 + 24 a b c d + 22 a^2 d^2\right) x^8 + \frac{208}{9} c^9 d^5 \left(21 b^2 c^2 + 77 a b c d + 55 a^2 d^2\right) x^9 + \frac{143}{5} c^8 d^6 \left(28 b^2 c^2 + 80 a b c d + 45 a^2 d^2\right) x^{10} + 260 c^7 d^7 \left(4 b^2 c^2 + 9 a b c d + 4 a^2 d^2\right) x^{11} + \frac{143}{6} c^6 d^8 \left(45 b^2 c^2 + 80 a b c d + 28 a^2 d^2\right) x^{12} + 16 c^5 d^9 \left(55 b^2 c^2 + 77 a b c d + 21 a^2 d^2\right) x^{13} + 26 c^4 d^{10} \left(22 b^2 c^2 + 24 a b c d + 5 a^2 d^2\right) x^{14} + \frac{56}{15} c^3 d^{11} \left(78 b^2 c^2 + 65 a b c d + 10 a^2 d^2\right) x^{15} + \frac{5}{4} c^2 d^{12} \left(91 b^2 c^2 + 56 a b c d + 6 a^2 d^2\right) x^{16} + \frac{16}{17} c d^{13} \left(35 b^2 c^2 + 15 a b c d + a^2 d^2\right) x^{17} + \frac{1}{18} d^{14} \left(120 b^2 c^2 + 32 a b c d + a^2 d^2\right) x^{18} + \frac{2}{19} b d^{15} (8 b c + a d) x^{19} + \frac{1}{20} b^2 d^{16} x^{20}$$

Problem 353: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 125 leaves, 4 steps):

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

Result (type 6, 142 leaves):

$$\left(a c (2 + m) x^{1+m} \text{AppellF1}\left[1 + m, 2, 1, 2 + m, -\frac{d x}{c}, -\frac{b x}{a}\right]\right) \Big/ \left((1 + m) (a + b x) (c + d x)^2 \left(a c (2 + m) \text{AppellF1}\left[1 + m, 2, 1, 2 + m, -\frac{d x}{c}, -\frac{b x}{a}\right] - x \left(b c \text{AppellF1}\left[2 + m, 2, 2, 3 + m, -\frac{d x}{c}, -\frac{b x}{a}\right] + 2 a d \text{AppellF1}\left[2 + m, 3, 1, 3 + m, -\frac{d x}{c}, -\frac{b x}{a}\right]\right)\right)\right)$$

Problem 354: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 206 leaves, 5 steps):

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

Result (type 6, 142 leaves):

$$\left(a\,c\,(2+m)\,x^{1+m}\,\text{AppellF1}\left[1+m,\,3,\,1,\,2+m,\,-\frac{d\,x}{c},\,-\frac{b\,x}{a}\right]\right)\Big/$$
$$\left((1+m)\,(a+b\,x)\,(c+d\,x)^3\,\left(a\,c\,(2+m)\,\text{AppellF1}\left[1+m,\,3,\,1,\,2+m,\,-\frac{d\,x}{c},\,-\frac{b\,x}{a}\right]-\right.\right.$$
$$x\,\left(b\,c\,\text{AppellF1}\left[2+m,\,3,\,2,\,3+m,\,-\frac{d\,x}{c},\,-\frac{b\,x}{a}\right]+\right.$$
$$\left.\left.\left.3\,a\,d\,\text{AppellF1}\left[2+m,\,4,\,1,\,3+m,\,-\frac{d\,x}{c},\,-\frac{b\,x}{a}\right]\right)\right)\right)$$

Problem 360: Result unnecessarily involves higher level functions.

$$\int\frac{(e\,x)^m}{(2-2\,a\,x)^4\,(1+a\,x)^3}\,dx$$

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

$$\frac{(e\,x)^{1+m}\,\text{Hypergeometric2F1}\left[4,\,\frac{1+m}{2},\,\frac{3+m}{2},\,a^2\,x^2\right]}{16\,e\,(1+m)}+\frac{a\,(e\,x)^{2+m}\,\text{Hypergeometric2F1}\left[4,\,\frac{2+m}{2},\,\frac{4+m}{2},\,a^2\,x^2\right]}{16\,e^2\,(2+m)}$$

Result (type 6, 120 leaves):

$$\left((2+m)\,x\,(e\,x)^m\,\text{AppellF1}[1+m,\,4,\,3,\,2+m,\,a\,x,\,-a\,x]\right)\Big/\left(16\,(1+m)\,(-1+a\,x)^4\,(1+a\,x)^3\right.$$
$$\left((2+m)\,\text{AppellF1}[1+m,\,4,\,3,\,2+m,\,a\,x,\,-a\,x]+a\,x\,\left(4\,\text{AppellF1}[2+m,\,5,\,3,\,3+m,\,a\,x,\,-a\,x]-\right.\right.$$
$$\left.\left.\left.3\,\text{HypergeometricPFQ}\left[\left\{4,\,1+\frac{m}{2}\right\},\,\left\{2+\frac{m}{2}\right\},\,a^2\,x^2\right]\right)\right)\right)$$

Problem 365: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 98 leaves, 5 steps):

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

Result (type 6, 144 leaves):

$$\left(a\,(2+m)\,x\,(e\,x)^m\,\text{AppellF1}\left[1+m,3,2,2+m,\frac{b\,x}{a},-\frac{b\,x}{a}\right]\right)\Big/\left(d^3\,(1+m)\,(a-b\,x)^3\,(a+b\,x)^2\left(a\,(2+m)\,\text{AppellF1}\left[1+m,3,2,2+m,\frac{b\,x}{a},-\frac{b\,x}{a}\right]+b\,x\left(3\,\text{AppellF1}\left[2+m,4,2,3+m,\frac{b\,x}{a},-\frac{b\,x}{a}\right]-2\,\text{HypergeometricPFQ}\left[\left\{3,1+\frac{m}{2}\right\},\left\{2+\frac{m}{2}\right\},\frac{b^2x^2}{a^2}\right]\right)\right)\right)$$

Problem 366: Result unnecessarily involves higher level functions.

$$\int\frac{(e\,x)^m}{(a+b\,x)^3\,(a\,d-b\,d\,x)^4}\,dx$$

Optimal (type 5, 98 leaves, 5 steps):

$$\frac{(e\,x)^{1+m}\,\text{Hypergeometric2F1}\left[4,\frac{1+m}{2},\frac{3+m}{2},\frac{b^2x^2}{a^2}\right]}{a^7\,d^4\,e\,(1+m)}+\frac{b\,(e\,x)^{2+m}\,\text{Hypergeometric2F1}\left[4,\frac{2+m}{2},\frac{4+m}{2},\frac{b^2x^2}{a^2}\right]}{a^8\,d^4\,e^2\,(2+m)}$$

Result (type 6, 144 leaves):

$$\left(a\,(2+m)\,x\,(e\,x)^m\,\text{AppellF1}\left[1+m,4,3,2+m,\frac{b\,x}{a},-\frac{b\,x}{a}\right]\right)\Big/\left(d^4\,(1+m)\,(a-b\,x)^4\,(a+b\,x)^3\left(a\,(2+m)\,\text{AppellF1}\left[1+m,4,3,2+m,\frac{b\,x}{a},-\frac{b\,x}{a}\right]+b\,x\left(4\,\text{AppellF1}\left[2+m,5,3,3+m,\frac{b\,x}{a},-\frac{b\,x}{a}\right]-3\,\text{HypergeometricPFQ}\left[\left\{4,1+\frac{m}{2}\right\},\left\{2+\frac{m}{2}\right\},\frac{b^2x^2}{a^2}\right]\right)\right)\right)$$

Problem 451: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^{1/3}\,\sqrt{c+d\,x}\,(4\,c+d\,x)}\,dx$$

Optimal (type 3, 199 leaves, 2 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{3}\,c^{1/6}\left(c^{1/3}+2^{1/3}d^{1/3}x^{1/3}\right)}{\sqrt{c+d\,x}}\right]}{2^{2/3}\sqrt{3}\,c^{5/6}\,d^{2/3}}+\frac{\text{ArcTan}\left[\frac{\sqrt{c+d\,x}}{\sqrt{3}\,\sqrt{c}}\right]}{2^{2/3}\sqrt{3}\,c^{5/6}\,d^{2/3}}-\frac{\text{ArcTanh}\left[\frac{c^{1/6}\left(c^{1/3}-2^{1/3}d^{1/3}x^{1/3}\right)}{\sqrt{c+d\,x}}\right]}{2^{2/3}\,c^{5/6}\,d^{2/3}}+\frac{\text{ArcTanh}\left[\frac{\sqrt{c+d\,x}}{\sqrt{c}}\right]}{3\times2^{2/3}\,c^{5/6}\,d^{2/3}}$$

Result (type 6, 147 leaves):

$$\left(30\,c\,x^{2/3}\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{2},1,\frac{5}{3},-\frac{d\,x}{c},-\frac{d\,x}{4\,c}\right]\right)\Big/\left(\sqrt{c+d\,x}\,\left(4\,c+d\,x\right)\left(20\,c\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{2},1,\frac{5}{3},-\frac{d\,x}{c},-\frac{d\,x}{4\,c}\right]-3\,d\,x\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{2},2,\frac{8}{3},-\frac{d\,x}{c},-\frac{d\,x}{4\,c}\right]+2\,\text{AppellF1}\left[\frac{5}{3},\frac{3}{2},1,\frac{8}{3},-\frac{d\,x}{c},-\frac{d\,x}{4\,c}\right]\right)\right)\right)$$

Problem 452: Result unnecessarily involves higher level functions.

$$\int\frac{1}{x^{1/3}\,\left(8\,c-d\,x\right)\,\sqrt{c+d\,x}}\,dx$$

Optimal (type 3, 143 leaves, 9 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{3}\,c^{1/6}\,\left(c^{1/3}+d^{1/3}\,x^{1/3}\right)}{\sqrt{c+d\,x}}\right]}{2\,\sqrt{3}\,c^{5/6}\,d^{2/3}}+\frac{\text{ArcTanh}\left[\frac{\left(c^{1/3}+d^{1/3}\,x^{1/3}\right)^2}{3\,c^{1/6}\,\sqrt{c+d\,x}}\right]}{6\,c^{5/6}\,d^{2/3}}-\frac{\text{ArcTanh}\left[\frac{\sqrt{c+d\,x}}{3\,\sqrt{c}}\right]}{6\,c^{5/6}\,d^{2/3}}$$

Result (type 6, 148 leaves):

$$\left(60\,c\,x^{2/3}\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{2},1,\frac{5}{3},-\frac{d\,x}{c},\frac{d\,x}{8\,c}\right]\right)\Big/\left(\left(8\,c-d\,x\right)\sqrt{c+d\,x}\,\left(40\,c\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{2},1,\frac{5}{3},-\frac{d\,x}{c},\frac{d\,x}{8\,c}\right]+3\,d\,x\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{2},2,\frac{8}{3},-\frac{d\,x}{c},\frac{d\,x}{8\,c}\right]-4\,\text{AppellF1}\left[\frac{5}{3},\frac{3}{2},1,\frac{8}{3},-\frac{d\,x}{c},\frac{d\,x}{8\,c}\right]\right)\right)\right)$$

Problem 716: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 43 leaves, 6 steps):

$$-\sqrt{1-x}\,\sqrt{1+x}+2\,\text{ArcSin}[x]-\text{ArcTanh}\left[\sqrt{1-x}\,\sqrt{1+x}\right]$$

Result (type 3, 96 leaves):

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

Problem 746: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 54 leaves, 2 steps):

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

Result (type 3, 107 leaves):

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

Problem 826: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 2 leaves, 1 step):

$$\text{ArcCosh}[x]$$

Result (type 3, 16 leaves):

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

Problem 843: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 30 leaves, 1 step):

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

Result (type 4, 70 leaves):

$$-\frac{2\,i\,\sqrt{-\frac{1}{b}}\,b\,\sqrt{1-\frac{4}{b^2\,x^2}}\,x\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{1}{b}}}{\sqrt{x}}\right],-1\right]}{\sqrt{8-2\,b^2\,x^2}}$$

Problem 844: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 33 leaves, 1 step):

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

Result (type 4, 78 leaves):

$$\frac{2\,\mathrm{i}\ \sqrt{-\frac{1}{b}}\ b\ \sqrt{1-\frac{4}{b^2\,x^2}}\ \sqrt{-x^2}\ \text{EllipticF}\left[\mathrm{i}\ \text{ArcSinh}\left[\frac{\sqrt{2}\ \sqrt{-\frac{1}{b}}}{\sqrt{x}}\right],-1\right]}{\sqrt{8-2\,b^2\,x^2}}$$

Problem 845: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 42 leaves, 1 step):

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

Result (type 4, 81 leaves):

$$-\frac{2\,\mathrm{i}\ \sqrt{-\frac{1}{b}}\ b\ \sqrt{1-\frac{4}{b^2\,x^2}}\ x^{3/2}\ \text{EllipticF}\left[\mathrm{i}\ \text{ArcSinh}\left[\frac{\sqrt{2}\ \sqrt{-\frac{1}{b}}}{\sqrt{x}}\right],-1\right]}{\sqrt{e\,x}\ \sqrt{8-2\,b^2\,x^2}}$$

Problem 849: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 10 leaves, 1 step):

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

Result (type 4, 66 leaves):

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

Problem 850: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 10 leaves, 2 steps):

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

Result (type 4, 66 leaves):

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

Problem 851: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{1}{\sqrt{b\,x}\,\sqrt{1-c\,x}\,\sqrt{1+c\,x}}\,dx$$

Optimal (type 4, 33 leaves, 1 step):

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

Result (type 4, 76 leaves):

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

Problem 852: Result more than twice size of optimal antiderivative.

$$\int\frac{1}{\sqrt{b\,x}\,\sqrt{1-c\,x}\,\sqrt{1+d\,x}}\,dx$$

Optimal (type 4, 38 leaves, 1 step):

$$\frac{2\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{b\,x}}{\sqrt{b}}\right],-\frac{d}{c}\right]}{\sqrt{b}\,\sqrt{c}}$$

Result (type 4, 89 leaves):

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

Problem 853: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 10 leaves, 1 step):

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

Result (type 4, 104 leaves):

$$\frac{2\,\sqrt{\frac{-1+x}{1+x}}\,\sqrt{\frac{1+x}{-1+x}}\,\left(\sqrt{-1+x}\,x\,\sqrt{\frac{1+x}{-1+x}}+\frac{i\,\sqrt{2}\,x\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}}{\sqrt{-1+x}}\right],\frac{1}{2}\right]}{\sqrt{\frac{x}{-1+x}}}\right)}{\sqrt{-(-1+x)\,x}}$$

Problem 854: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 10 leaves, 2 steps):

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

Result (type 4, 104 leaves):

$$\frac{2\,\sqrt{\frac{-1+x}{1+x}}\,\sqrt{\frac{1+x}{-1+x}}\,\left(\sqrt{-1+x}\,x\,\sqrt{\frac{1+x}{-1+x}}+\frac{i\,\sqrt{2}\,x\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}}{\sqrt{-1+x}}\right],\frac{1}{2}\right]}{\sqrt{\frac{x}{-1+x}}}\right)}{\sqrt{-(-1+x)\,x}}$$

Problem 855: Result more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{1+c\,x}}{\sqrt{b\,x}\,\sqrt{1-c\,x}}\,dx$$

Optimal (type 4, 33 leaves, 1 step):

$$\frac{2\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{b\,x}}{\sqrt{b}}\right],-1\right]}{\sqrt{b}\,\sqrt{c}}$$

Result (type 4, 119 leaves):

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

Problem 856: Result more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{1+c\,x}}{\sqrt{b\,x}\sqrt{1-d\,x}}\,dx$$

Optimal (type 4, 38 leaves, 1 step):

$$\frac{2\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{d}\sqrt{b\,x}}{\sqrt{b}}\right],-\frac{c}{d}\right]}{\sqrt{b}\sqrt{d}}$$

Result (type 4, 102 leaves):

$$\frac{2\sqrt{1-d\,x}\left(-1-c\,x+\frac{\sqrt{1+\frac{1}{c\,x}}\sqrt{x}\ \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{1}{c}}}{\sqrt{x}}\right],-\frac{c}{d}\right]}{\sqrt{-\frac{1}{c}}\sqrt{1-\frac{1}{d\,x}}}\right)}{d\sqrt{b\,x}\sqrt{1+c\,x}}$$

Problem 859: Result more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{1-c\,x}}{\sqrt{b\,x}\sqrt{1+c\,x}}\,dx$$

Optimal (type 4, 37 leaves, 1 step):

$$-\frac{2\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{b\,x}}{\sqrt{-b}}\right],-1\right]}{\sqrt{-b}\sqrt{c}}$$

Result (type 4, 77 leaves):

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

Problem 860: Result more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{1-c\,x}}{\sqrt{b\,x}\,\sqrt{1+d\,x}}\,dx$$

Optimal (type 4, 42 leaves, 1 step):

$$-\frac{2\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{d}\,\sqrt{b\,x}}{\sqrt{-b}}\right],-\frac{c}{d}\right]}{\sqrt{-b}\,\sqrt{d}}$$

Result (type 4, 112 leaves):

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

$$\left(\sqrt{\frac{1}{c}}\,\sqrt{b\,x}\,\sqrt{1-c\,x}\,\sqrt{1+d\,x}\right)$$

Problem 862: Result more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{d+e\,x}}{\sqrt{2-3\,x}\,\sqrt{x}}\,dx$$

Optimal (type 4, 51 leaves, 2 steps):

$$\frac{2\,\sqrt{d+e\,x}\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{\frac{3}{2}}\,\sqrt{x}\right],-\frac{2\,e}{3\,d}\right]}{\sqrt{3}\,\sqrt{1+\frac{e\,x}{d}}}$$

Result (type 4, 125 leaves):

$$\frac{2\,\sqrt{x}\left(\frac{3\,(d+e\,x)}{\sqrt{2-3\,x}}-\frac{(3\,d+2\,e)\,\sqrt{\frac{d+e\,x}{e\,(-2+3\,x)}}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{2+\frac{3\,d}{e}}}{\sqrt{2-3\,x}}\right],\frac{2\,e}{3\,d+2\,e}\right]}{\sqrt{2+\frac{3\,d}{e}}\,\sqrt{\frac{x}{-2+3\,x}}}\right)}{3\,\sqrt{d+e\,x}}$$

Problem 863: Result unnecessarily involves higher level functions.

$$\int \frac{x^4}{(1-x)^{1/3}\,(2-x)^{1/3}}\,dx$$

Optimal (type 4, 752 leaves, 8 steps):

$$\frac{99}{130}(1-x)^{2/3}(2-x)^{2/3}x^2+\frac{3}{13}(1-x)^{2/3}(2-x)^{2/3}x^3+\frac{27}{455}(1-x)^{2/3}(2-x)^{2/3}(89+34x)-\frac{891\times 2^{2/3}\sqrt{(3-2x)^2}\,\sqrt{(-3+2x)^2}\,(2-3x+x^2)^{1/3}}{91\,(3-2x)\,(1-x)^{1/3}(2-x)^{1/3}\left(1+\sqrt{3}+2^{2/3}(2-3x+x^2)^{1/3}\right)}+$$

$$\left(891\times 3^{1/4}\sqrt{2-\sqrt{3}}\,\sqrt{(-3+2x)^2}\,(2-3x+x^2)^{1/3}\left(1+2^{2/3}(2-3x+x^2)^{1/3}\right)\sqrt{\frac{1-2^{2/3}(2-3x+x^2)^{1/3}+2\times 2^{1/3}(2-3x+x^2)^{2/3}}{\left(1+\sqrt{3}+2^{2/3}(2-3x+x^2)^{1/3}\right)^2}}\;\text{EllipticE}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+2^{2/3}(2-3x+x^2)^{1/3}}{1+\sqrt{3}+2^{2/3}(2-3x+x^2)^{1/3}}\right],-7-4\sqrt{3}\right]\right)\Bigg/$$

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

$$\left(594\times 2^{1/6}\times 3^{3/4}\sqrt{(-3+2x)^2}\,(2-3x+x^2)^{1/3}\left(1+2^{2/3}(2-3x+x^2)^{1/3}\right)\sqrt{\frac{1-2^{2/3}(2-3x+x^2)^{1/3}+2\times 2^{1/3}(2-3x+x^2)^{2/3}}{\left(1+\sqrt{3}+2^{2/3}(2-3x+x^2)^{1/3}\right)^2}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+2^{2/3}(2-3x+x^2)^{1/3}}{1+\sqrt{3}+2^{2/3}(2-3x+x^2)^{1/3}}\right],-7-4\sqrt{3}\right]\right)\Bigg/$$

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

Result (type 5, 54 leaves):

$$\frac{3}{910}(1-x)^{2/3}\left((2-x)^{2/3}\left(1602+612x+231x^2+70x^3\right)-2970\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},-1+x\right]\right)$$

Problem 864: Result unnecessarily involves higher level functions.

$$\int \frac{x^3}{(1-x)^{1/3}\,(2-x)^{1/3}}\,dx$$

Optimal (type 4, 727 leaves, 7 steps):

$$\frac{3}{10}(1-x)^{2/3}(2-x)^{2/3}x^2+\frac{9}{70}(1-x)^{2/3}(2-x)^{2/3}(23+8x)-\frac{81\sqrt{(3-2x)^2}\sqrt{(-3+2x)^2}\,(2-3x+x^2)^{1/3}}{7\times 2^{1/3}(3-2x)(1-x)^{1/3}(2-x)^{1/3}\left(1+\sqrt{3}+2^{2/3}(2-3x+x^2)^{1/3}\right)}+$$

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

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

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

$$\left(27\times 2^{1/6}\times 3^{3/4}\sqrt{(-3+2x)^2}\,(2-3x+x^2)^{1/3}\left(1+2^{2/3}(2-3x+x^2)^{1/3}\right)\sqrt{\frac{1-2^{2/3}(2-3x+x^2)^{1/3}+2\times 2^{1/3}(2-3x+x^2)^{2/3}}{\left(1+\sqrt{3}+2^{2/3}(2-3x+x^2)^{1/3}\right)^2}}\right.$$

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

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

Result (type 5, 49 leaves):

$$\frac{3}{70}(1-x)^{2/3}\left((2-x)^{2/3}(69+24x+7x^2)-135\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},-1+x\right]\right)$$

Problem 865: Result unnecessarily involves higher level functions.

$$\int \frac{x^2}{(1-x)^{1/3}\,(2-x)^{1/3}}\,dx$$

Optimal (type 4, 720 leaves, 7 steps):

$$\frac{45}{28}(1-x)^{2/3}(2-x)^{2/3}+\frac{3}{7}(1-x)^{2/3}(2-x)^{2/3}x-\frac{99\sqrt{(3-2x)^2}\sqrt{(-3+2x)^2}\left(2-3x+x^2\right)^{1/3}}{14\times 2^{1/3}(3-2x)(1-x)^{1/3}(2-x)^{1/3}\left(1+\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}\right)}+$$

$$\left(99\times 3^{1/4}\sqrt{2-\sqrt{3}}\sqrt{(-3+2x)^2}\left(2-3x+x^2\right)^{1/3}\left(1+2^{2/3}\left(2-3x+x^2\right)^{1/3}\right)\sqrt{\frac{1-2^{2/3}\left(2-3x+x^2\right)^{1/3}+2\times 2^{1/3}\left(2-3x+x^2\right)^{2/3}}{\left(1+\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}\right)^2}}\right.$$
$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}}{1+\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}}\right],-7-4\sqrt{3}\right]\right)\Big/$$
$$\left(28\times 2^{1/3}(3-2x)\sqrt{(3-2x)^2}(1-x)^{1/3}(2-x)^{1/3}\sqrt{\frac{1+2^{2/3}\left(2-3x+x^2\right)^{1/3}}{\left(1+\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}\right)^2}}\right)-$$
$$\left(33\times 3^{3/4}\sqrt{(-3+2x)^2}\left(2-3x+x^2\right)^{1/3}\left(1+2^{2/3}\left(2-3x+x^2\right)^{1/3}\right)\right.$$
$$\sqrt{\frac{1-2^{2/3}\left(2-3x+x^2\right)^{1/3}+2\times 2^{1/3}\left(2-3x+x^2\right)^{2/3}}{\left(1+\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}\right)^2}}$$
$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}}{1+\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}}\right],-7-4\sqrt{3}\right]\right)\Big/$$
$$\left(7\times 2^{5/6}(3-2x)\sqrt{(3-2x)^2}(1-x)^{1/3}(2-x)^{1/3}\sqrt{\frac{1+2^{2/3}\left(2-3x+x^2\right)^{1/3}}{\left(1+\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 44 leaves):

$$\frac{3}{28}(1-x)^{2/3}\left((2-x)^{2/3}(15+4x)-33\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},-1+x\right]\right)$$

Problem 866: Result unnecessarily involves higher level functions.

$$\int \frac{x}{(1-x)^{1/3}\,(2-x)^{1/3}}\,dx$$

Optimal (type 4, 695 leaves, 6 steps):

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

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

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

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

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

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

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

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

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

Result (type 5, 38 leaves):

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

Problem 867: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(1-x)^{1/3}\,(2-x)^{1/3}}\,dx$$

Optimal (type 4, 671 leaves, 5 steps):

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

$$\left(3\times 3^{1/4}\sqrt{2-\sqrt{3}}\,\sqrt{(-3+2x)^2}\,\left(2-3x+x^2\right)^{1/3}\right.$$
$$\left(1+2^{2/3}\left(2-3x+x^2\right)^{1/3}\right)\sqrt{\frac{1-2^{2/3}\left(2-3x+x^2\right)^{1/3}+2\times 2^{1/3}\left(2-3x+x^2\right)^{2/3}}{\left(1+\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}\right)^2}}$$
$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}}{1+\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}}\right],-7-4\sqrt{3}\right]\right)\Big/$$
$$\left(2\times 2^{1/3}\,(3-2x)\sqrt{(3-2x)^2}\,(1-x)^{1/3}\,(2-x)^{1/3}\sqrt{\frac{1+2^{2/3}\left(2-3x+x^2\right)^{1/3}}{\left(1+\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}\right)^2}}\right)-$$
$$\left(2^{1/6}\times 3^{3/4}\sqrt{(-3+2x)^2}\,\left(2-3x+x^2\right)^{1/3}\left(1+2^{2/3}\left(2-3x+x^2\right)^{1/3}\right)\right.$$
$$\sqrt{\frac{1-2^{2/3}\left(2-3x+x^2\right)^{1/3}+2\times 2^{1/3}\left(2-3x+x^2\right)^{2/3}}{\left(1+\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}\right)^2}}$$
$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}}{1+\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}}\right],-7-4\sqrt{3}\right]\right)\Big/$$
$$\left((3-2x)\sqrt{(3-2x)^2}\,(1-x)^{1/3}\,(2-x)^{1/3}\sqrt{\frac{1+2^{2/3}\left(2-3x+x^2\right)^{1/3}}{\left(1+\sqrt{3}+2^{2/3}\left(2-3x+x^2\right)^{1/3}\right)^2}}\right)$$

Result (type 5, 26 leaves):

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

Problem 868: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(1-x)^{1/3}\,(2-x)^{1/3}\,x}\,dx$$

Optimal (type 3, 99 leaves, 1 step):

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

Result (type 6, 115 leaves):

$$\left(15\,(1-x)^{2/3}\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},1,\frac{5}{3},-1+x,1-x\right]\right)\Big/\left(2\,(2-x)^{1/3}\,x\,\left(-5\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},1,\frac{5}{3},-1+x,1-x\right]+(-1+x)\,\left(3\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},2,\frac{8}{3},-1+x,1-x\right]-\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},1,\frac{8}{3},-1+x,1-x\right]\right)\right)\right)$$

Problem 869: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(1-x)^{1/3}\,(2-x)^{1/3}\,x^2}\,dx$$

Optimal (type 4, 796 leaves, 8 steps):

$$
\begin{aligned}
&-\frac{(1-x)^{2/3}\,(2-x)^{2/3}}{2\,x}-\frac{\sqrt{(3-2\,x)^2}\,\sqrt{(-3+2\,x)^2}\,\left(2-3\,x+x^2\right)^{1/3}}{2\times 2^{1/3}\,(3-2\,x)\,(1-x)^{1/3}\,(2-x)^{1/3}\,\left(1+\sqrt{3}+2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}\right)}-\\
&\frac{\sqrt{3}\,\text{ArcTan}\left[\frac{1}{\sqrt{3}}+\frac{2^{1/3}\,(2-x)^{2/3}}{\sqrt{3}\,(1-x)^{1/3}}\right]}{4\times 2^{1/3}}+\left(3^{1/4}\,\sqrt{2-\sqrt{3}}\,\sqrt{(-3+2\,x)^2}\,\left(2-3\,x+x^2\right)^{1/3}\right.\\
&\quad\left(1+2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}\right)\sqrt{\frac{1-2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}+2\,2^{1/3}\,\left(2-3\,x+x^2\right)^{2/3}}{\left(1+\sqrt{3}+2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}\right)^2}}\\
&\quad\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}}{1+\sqrt{3}+2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}}\right],\,-7-4\,\sqrt{3}\right]\right)\Big/\\
&\left(4\times 2^{1/3}\,(3-2\,x)\,\sqrt{(3-2\,x)^2}\,(1-x)^{1/3}\,(2-x)^{1/3}\,\sqrt{\frac{1+2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}}{\left(1+\sqrt{3}+2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}\right)^2}}\right)-\\
&\left(\sqrt{(-3+2\,x)^2}\,\left(2-3\,x+x^2\right)^{1/3}\,\left(1+2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}\right)\right.\\
&\quad\sqrt{\frac{1-2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}+2\times 2^{1/3}\,\left(2-3\,x+x^2\right)^{2/3}}{\left(1+\sqrt{3}+2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}\right)^2}}\\
&\quad\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}}{1+\sqrt{3}+2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}}\right],\,-7-4\,\sqrt{3}\right]\right)\Big/\\
&\left(2^{5/6}\times 3^{1/4}\,(3-2\,x)\,\sqrt{(3-2\,x)^2}\,(1-x)^{1/3}\,(2-x)^{1/3}\,\sqrt{\frac{1+2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}}{\left(1+\sqrt{3}+2^{2/3}\,\left(2-3\,x+x^2\right)^{1/3}\right)^2}}\right)+\\
&\frac{3\,\text{Log}\left[-(1-x)^{1/3}+\frac{(2-x)^{2/3}}{2^{2/3}}\right]}{8\times 2^{1/3}}-\frac{\text{Log}[x]}{4\times 2^{1/3}}
\end{aligned}
$$

Result (type 6, 219 leaves) :

$$\frac{1}{10\,(2-x)^{1/3}\,x}(1-x)^{2/3}\Bigg(5\,(-2+x)-\Big(50\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},1,\frac{5}{3},-1+x,1-x\Big]\Big)\Big/\Big(5\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},1,\frac{5}{3},-1+x,1-x\Big]-(-1+x)\Big(3\,\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},2,\frac{8}{3},-1+x,1-x\Big]-\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},1,\frac{8}{3},-1+x,1-x\Big]\Big)\Big)+\Big(8\,(-1+x)\,\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},1,\frac{8}{3},-1+x,1-x\Big]\Big)\Big/\Big(-8\,\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},1,\frac{8}{3},-1+x,1-x\Big]+(-1+x)\Big(3\,\text{AppellF1}\Big[\frac{8}{3},\frac{1}{3},2,\frac{11}{3},-1+x,1-x\Big]-\text{AppellF1}\Big[\frac{8}{3},\frac{4}{3},1,\frac{11}{3},-1+x,1-x\Big]\Big)\Big)\Bigg)$$

Problem 870: Result unnecessarily involves higher level functions.

$$\int\frac{1}{(1-x)^{1/3}\,(2-x)^{1/3}\,x^3}\,dx$$

Optimal (type 4, 821 leaves, 9 steps) :

$$-\frac{(1-x)^{2/3}(2-x)^{2/3}}{4x^2}-\frac{(1-x)^{2/3}(2-x)^{2/3}}{2x}-$$

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

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

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

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

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

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

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

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

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

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

Result (type 6, 225 leaves) :

$$\frac{1}{20\,(2-x)^{1/3}\,x^2}(1-x)^{2/3}\left(5\,(-2+x)\,(1+2x)+\left(75\,x\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},1,\frac{5}{3},-1+x,1-x\right]\right)\Big/\left(-5\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},1,\frac{5}{3},-1+x,1-x\right]+(-1+x)\left(3\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},2,\frac{8}{3},-1+x,1-x\right]-\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},1,\frac{8}{3},-1+x,1-x\right]\right)\right)+\left(16\,(-1+x)\,x\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},1,\frac{8}{3},-1+x,1-x\right]\right)\Big/\left(-8\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},1,\frac{8}{3},-1+x,1-x\right]+(-1+x)\left(3\,\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},2,\frac{11}{3},-1+x,1-x\right]-\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},1,\frac{11}{3},-1+x,1-x\right]\right)\right)\right)$$

Problem 871: Result unnecessarily involves higher level functions.

$$\int\frac{x^3\,(a+b\,x)^{1/4}}{(c+d\,x)^{1/4}}\,dx$$

Optimal (type 3, 340 leaves, 8 steps):

$$-\frac{1}{512\,b^3\,d^4}\left(195\,b^3\,c^3+135\,a\,b^2\,c^2\,d+105\,a^2\,b\,c\,d^2+77\,a^3\,d^3\right)(a+b\,x)^{1/4}\,(c+d\,x)^{3/4}+\frac{x^2\,(a+b\,x)^{5/4}\,(c+d\,x)^{3/4}}{4\,b\,d}+\frac{1}{384\,b^3\,d^3}(a+b\,x)^{5/4}\,(c+d\,x)^{3/4}\left(117\,b^2\,c^2+94\,a\,b\,c\,d+77\,a^2\,d^2-8\,b\,d\,(13\,b\,c+11\,a\,d)\,x\right)+\frac{1}{1024\,b^{15/4}\,d^{17/4}}(b\,c-a\,d)\left(195\,b^3\,c^3+135\,a\,b^2\,c^2\,d+105\,a^2\,b\,c\,d^2+77\,a^3\,d^3\right)\text{ArcTan}\left[\frac{d^{1/4}\,(a+b\,x)^{1/4}}{b^{1/4}\,(c+d\,x)^{1/4}}\right]+\frac{1}{1024\,b^{15/4}\,d^{17/4}}(b\,c-a\,d)\left(195\,b^3\,c^3+135\,a\,b^2\,c^2\,d+105\,a^2\,b\,c\,d^2+77\,a^3\,d^3\right)\text{ArcTanh}\left[\frac{d^{1/4}\,(a+b\,x)^{1/4}}{b^{1/4}\,(c+d\,x)^{1/4}}\right]$$

Result (type 5, 221 leaves):

$$\left((c+d\,x)^{3/4}\left(d\,(a+b\,x)\left(77\,a^3\,d^3+a^2\,b\,d^2\,(61\,c-44\,d\,x)+a\,b^2\,d\,(63\,c^2-40\,c\,d\,x+32\,d^2\,x^2)+b^3\,(-585\,c^3+468\,c^2\,d\,x-416\,c\,d^2\,x^2+384\,d^3\,x^3)\right)-\left(-195\,b^4\,c^4+60\,a\,b^3\,c^3\,d+30\,a^2\,b^2\,c^2\,d^2+28\,a^3\,b\,c\,d^3+77\,a^4\,d^4\right)\left(\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right)^{3/4}\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\Big/\left(1536\,b^3\,d^5\,(a+b\,x)^{3/4}\right)$$

Problem 872: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 268 leaves, 8 steps):

$$\frac{\left(15 b^2 c^2+10 a b c d+7 a^2 d^2\right) (a+b x)^{1/4} (c+d x)^{3/4}}{32 b^2 d^3}-\frac{(9 b c+7 a d) (a+b x)^{5/4} (c+d x)^{3/4}}{24 b^2 d^2}+\frac{x (a+b x)^{5/4} (c+d x)^{3/4}}{3 b d}-\frac{(b c-a d) \left(15 b^2 c^2+10 a b c d+7 a^2 d^2\right) \text{ArcTan}\left[\frac{d^{1/4} (a+b x)^{1/4}}{b^{1/4} (c+d x)^{1/4}}\right]}{64 b^{11/4} d^{13/4}}-\frac{(b c-a d) \left(15 b^2 c^2+10 a b c d+7 a^2 d^2\right) \text{ArcTanh}\left[\frac{d^{1/4} (a+b x)^{1/4}}{b^{1/4} (c+d x)^{1/4}}\right]}{64 b^{11/4} d^{13/4}}$$

Result (type 5, 168 leaves):

$$\left((c+d x)^{3/4} \left(-d (a+b x) \left(7 a^2 d^2+2 a b d (3 c-2 d x)+b^2 \left(-45 c^2+36 c d x-32 d^2 x^2\right)\right)+\left(-15 b^3 c^3+5 a b^2 c^2 d+3 a^2 b c d^2+7 a^3 d^3\right) \left(\frac{d (a+b x)}{-b c+a d}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\frac{b (c+d x)}{b c-a d}\right]\right)\right) \Big/ \left(96 b^2 d^4 (a+b x)^{3/4}\right)$$

Problem 873: Result unnecessarily involves higher level functions.

$$\int \frac{x (a+b x)^{1/4}}{(c+d x)^{1/4}} \, dx$$

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

$$-\frac{(5 b c+3 a d) (a+b x)^{1/4} (c+d x)^{3/4}}{8 b d^2}+\frac{(a+b x)^{5/4} (c+d x)^{3/4}}{2 b d}+\frac{(b c-a d) (5 b c+3 a d) \text{ArcTan}\left[\frac{d^{1/4} (a+b x)^{1/4}}{b^{1/4} (c+d x)^{1/4}}\right]}{16 b^{7/4} d^{9/4}}+\frac{(b c-a d) (5 b c+3 a d) \text{ArcTanh}\left[\frac{d^{1/4} (a+b x)^{1/4}}{b^{1/4} (c+d x)^{1/4}}\right]}{16 b^{7/4} d^{9/4}}$$

Result (type 5, 122 leaves):

$$\left((c+d x)^{3/4} \left(3 d (a+b x) (-5 b c+a d+4 b d x)+\left(5 b^2 c^2-2 a b c d-3 a^2 d^2\right) \left(\frac{d (a+b x)}{-b c+a d}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\frac{b (c+d x)}{b c-a d}\right]\right)\right) \Big/ \left(24 b d^3 (a+b x)^{3/4}\right)$$

Problem 874: Result unnecessarily involves higher level functions.

$$\int \frac{(a+b x)^{1/4}}{(c+d x)^{1/4}} \, dx$$

Optimal (type 3, 127 leaves, 6 steps):

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

Result (type 5, 76 leaves):

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

Problem 875: Result unnecessarily involves higher level functions.

$$\int \frac{(a+b x)^{1/4}}{x (c+d x)^{1/4}} \, dx$$

Optimal (type 3, 169 leaves, 11 steps):

$$-\frac{2 a^{1/4} \operatorname{ArcTan}\left[\frac{c^{1/4} (a+b x)^{1/4}}{a^{1/4} (c+d x)^{1/4}}\right]}{c^{1/4}}+\frac{2 b^{1/4} \operatorname{ArcTan}\left[\frac{d^{1/4} (a+b x)^{1/4}}{b^{1/4} (c+d x)^{1/4}}\right]}{d^{1/4}}-\frac{2 a^{1/4} \operatorname{ArcTanh}\left[\frac{c^{1/4} (a+b x)^{1/4}}{a^{1/4} (c+d x)^{1/4}}\right]}{c^{1/4}}+\frac{2 b^{1/4} \operatorname{ArcTanh}\left[\frac{d^{1/4} (a+b x)^{1/4}}{b^{1/4} (c+d x)^{1/4}}\right]}{d^{1/4}}$$

Result (type 6, 216 leaves):

$$\left(36 a (b c-a d) (a+b x)^{5/4} \text{AppellF1}\left[\frac{5}{4},\frac{1}{4},1,\frac{9}{4},\frac{d (a+b x)}{-b c+a d},1+\frac{b x}{a}\right]\right) \Big/ \left(5 b x (c+d x)^{1/4} \left(9 a (b c-a d) \text{AppellF1}\left[\frac{5}{4},\frac{1}{4},1,\frac{9}{4},\frac{d (a+b x)}{-b c+a d},1+\frac{b x}{a}\right]-(a+b x) \left((-4 b c+4 a d) \text{AppellF1}\left[\frac{9}{4},\frac{1}{4},2,\frac{13}{4},\frac{d (a+b x)}{-b c+a d},1+\frac{b x}{a}\right]+a d \text{AppellF1}\left[\frac{9}{4},\frac{5}{4},1,\frac{13}{4},\frac{d (a+b x)}{-b c+a d},1+\frac{b x}{a}\right]\right)\right)\right)$$

Problem 876: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 131 leaves, 5 steps):

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

Result (type 6, 176 leaves) :

$$\left(-(a+b x) (c+d x)+\left(2 b d (b c-a d) x^2 \text{AppellF1}\left[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\Big/\left(-8 b d x \text{AppellF1}\left[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b x},-\frac{c}{d x}\right]+b c \text{AppellF1}\left[2,\frac{3}{4},\frac{5}{4},3,-\frac{a}{b x},-\frac{c}{d x}\right]+3 a d \text{AppellF1}\left[2,\frac{7}{4},\frac{1}{4},3,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\right)\Big/\left(c x (a+b x)^{3/4} (c+d x)^{1/4}\right)$$

Problem 877: Result unnecessarily involves higher level functions.

$$\int \frac{(a+b x)^{1/4}}{x^3 (c+d x)^{1/4}} \, dx$$

Optimal (type 3, 194 leaves, 6 steps) :

$$\frac{(3 b c+5 a d) (a+b x)^{1/4} (c+d x)^{3/4}}{8 a c^2 x}-\frac{(a+b x)^{5/4} (c+d x)^{3/4}}{2 a c x^2}+\frac{(b c-a d) (3 b c+5 a d) \text{ArcTan}\left[\frac{c^{1/4} (a+b x)^{1/4}}{a^{1/4} (c+d x)^{1/4}}\right]}{16 a^{7/4} c^{9/4}}+\frac{(b c-a d) (3 b c+5 a d) \text{ArcTanh}\left[\frac{c^{1/4} (a+b x)^{1/4}}{a^{1/4} (c+d x)^{1/4}}\right]}{16 a^{7/4} c^{9/4}}$$

Result (type 6, 211 leaves) :

$$\left((a+b x) (c+d x) (-4 a c-b c x+5 a d x)+\left(2 b d \left(-3 b^2 c^2-2 a b c d+5 a^2 d^2\right) x^3 \text{AppellF1}\left[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\Big/\left(-8 b d x \text{AppellF1}\left[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b x},-\frac{c}{d x}\right]+b c \text{AppellF1}\left[2,\frac{3}{4},\frac{5}{4},3,-\frac{a}{b x},-\frac{c}{d x}\right]+3 a d \text{AppellF1}\left[2,\frac{7}{4},\frac{1}{4},3,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\right)\Big/\left(8 a c^2 x^2 (a+b x)^{3/4} (c+d x)^{1/4}\right)$$

Problem 878: Result unnecessarily involves higher level functions.

$$\int \frac{(a+b x)^{1/4}}{x^4 (c+d x)^{1/4}} \, dx$$

Optimal (type 3, 266 leaves, 8 steps) :

$$-\frac{(a+b x)^{1/4} (c+d x)^{3/4}}{3 c x^3}-\frac{(b c-9 a d) (a+b x)^{1/4} (c+d x)^{3/4}}{24 a c^2 x^2}+\frac{(7 b c-15 a d) (b c+3 a d) (a+b x)^{1/4} (c+d x)^{3/4}}{96 a^2 c^3 x}-\frac{(b c-a d) \left(7 b^2 c^2+10 a b c d+15 a^2 d^2\right) \text{ArcTan}\left[\frac{c^{1/4} (a+b x)^{1/4}}{a^{1/4} (c+d x)^{1/4}}\right]}{64 a^{11/4} c^{13/4}}-\frac{(b c-a d) \left(7 b^2 c^2+10 a b c d+15 a^2 d^2\right) \text{ArcTanh}\left[\frac{c^{1/4} (a+b x)^{1/4}}{a^{1/4} (c+d x)^{1/4}}\right]}{64 a^{11/4} c^{13/4}}$$

Result (type 6, 260 leaves):

$$\left(-(a+b x) (c+d x) \left(-7 b^2 c^2 x^2+2 a b c x (2 c-3 d x)+a^2 \left(32 c^2-36 c d x+45 d^2 x^2\right)\right)+\left(6 b d \left(7 b^3 c^3+3 a b^2 c^2 d+5 a^2 b c d^2-15 a^3 d^3\right) x^4 \text{AppellF1}\left[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\Big/\left(-8 b d x \text{AppellF1}\left[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b x},-\frac{c}{d x}\right]+b c \text{AppellF1}\left[2,\frac{3}{4},\frac{5}{4},3,-\frac{a}{b x},-\frac{c}{d x}\right]+3 a d \text{AppellF1}\left[2,\frac{7}{4},\frac{1}{4},3,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\right)\Big/\left(96 a^2 c^3 x^3 (a+b x)^{3/4} (c+d x)^{1/4}\right)$$

Problem 879: Result unnecessarily involves higher level functions.

$$\int \frac{(a+b x)^{1/4}}{x^5 (c+d x)^{1/4}} \, dx$$

Optimal (type 3, 368 leaves, 9 steps):

$$-\frac{(a+b x)^{1/4} (c+d x)^{3/4}}{4 c x^4}-\frac{(b c-13 a d) (a+b x)^{1/4} (c+d x)^{3/4}}{48 a c^2 x^3}+\frac{\left(11 b^2 c^2+10 a b c d-117 a^2 d^2\right) (a+b x)^{1/4} (c+d x)^{3/4}}{384 a^2 c^3 x^2}-\frac{\left(77 b^3 c^3+61 a b^2 c^2 d+63 a^2 b c d^2-585 a^3 d^3\right) (a+b x)^{1/4} (c+d x)^{3/4}}{1536 a^3 c^4 x}+\frac{1}{1024 a^{15/4} c^{17/4}}(b c-a d) \left(77 b^3 c^3+105 a b^2 c^2 d+135 a^2 b c d^2+195 a^3 d^3\right) \text{ArcTan}\left[\frac{c^{1/4} (a+b x)^{1/4}}{a^{1/4} (c+d x)^{1/4}}\right]+\frac{1}{1024 a^{15/4} c^{17/4}}(b c-a d) \left(77 b^3 c^3+105 a b^2 c^2 d+135 a^2 b c d^2+195 a^3 d^3\right) \text{ArcTanh}\left[\frac{c^{1/4} (a+b x)^{1/4}}{a^{1/4} (c+d x)^{1/4}}\right]$$

Result (type 6, 315 leaves):

$$\Big((a+b\,x)\,(c+d\,x)\,\big(-77\,b^3\,c^3\,x^3+a\,b^2\,c^2\,x^2\,(44\,c-61\,d\,x)+a^2\,b\,c\,x\,(-32\,c^2+40\,c\,d\,x-63\,d^2\,x^2)+a^3\,(-384\,c^3+416\,c^2\,d\,x-468\,c\,d^2\,x^2+585\,d^3\,x^3)\big)-\Big(6\,b\,d\,(77\,b^4\,c^4+28\,a\,b^3\,c^3\,d+30\,a^2\,b^2\,c^2\,d^2+60\,a^3\,b\,c\,d^3-195\,a^4\,d^4)\,x^5\,\text{AppellF1}\Big[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b\,x},-\frac{c}{d\,x}\Big]\Big)\Big/\Big(-8\,b\,d\,x\,\text{AppellF1}\Big[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b\,x},-\frac{c}{d\,x}\Big]+b\,c\,\text{AppellF1}\Big[2,\frac{3}{4},\frac{5}{4},3,-\frac{a}{b\,x},-\frac{c}{d\,x}\Big]+3\,a\,d\,\text{AppellF1}\Big[2,\frac{7}{4},\frac{1}{4},3,-\frac{a}{b\,x},-\frac{c}{d\,x}\Big]\Big)\Big)\Big/\Big(1536\,a^3\,c^4\,x^4\,(a+b\,x)^{3/4}\,(c+d\,x)^{1/4}\Big)$$

Problem 880: Result unnecessarily involves higher level functions.

$$\int \frac{x^2\,(1+x)^{1/4}}{(1-x)^{1/4}}\,dx$$

Optimal (type 3, 234 leaves, 14 steps):

$$-\frac{3}{8}\,(1-x)^{3/4}\,(1+x)^{1/4}-\frac{1}{12}\,(1-x)^{3/4}\,(1+x)^{5/4}-\frac{1}{3}\,(1-x)^{3/4}\,x\,(1+x)^{5/4}+\frac{3\,\text{ArcTan}\Big[1-\frac{\sqrt{2}\,(1-x)^{1/4}}{(1+x)^{1/4}}\Big]}{8\,\sqrt{2}}-\frac{3\,\text{ArcTan}\Big[1+\frac{\sqrt{2}\,(1-x)^{1/4}}{(1+x)^{1/4}}\Big]}{8\,\sqrt{2}}-\frac{3\,\text{Log}\Big[1+\frac{\sqrt{1-x}}{\sqrt{1+x}}-\frac{\sqrt{2}\,(1-x)^{1/4}}{(1+x)^{1/4}}\Big]}{16\,\sqrt{2}}+\frac{3\,\text{Log}\Big[1+\frac{\sqrt{1-x}}{\sqrt{1+x}}+\frac{\sqrt{2}\,(1-x)^{1/4}}{(1+x)^{1/4}}\Big]}{16\,\sqrt{2}}$$

Result (type 5, 57 leaves):

$$\frac{1}{24}\,(1+x)^{1/4}\,\Big(-(1-x)^{3/4}\,(11+10\,x+8\,x^2)+9\times 2^{3/4}\,\text{Hypergeometric2F1}\Big[\frac{1}{4},\frac{1}{4},\frac{5}{4},\frac{1+x}{2}\Big]\Big)$$

Problem 881: Result unnecessarily involves higher level functions.

$$\int \frac{x\,(1+x)^{1/4}}{(1-x)^{1/4}}\,dx$$

Optimal (type 3, 213 leaves, 13 steps):

$$-\frac{1}{4}\,(1-x)^{3/4}\,(1+x)^{1/4}-\frac{1}{2}\,(1-x)^{3/4}\,(1+x)^{5/4}+\frac{\text{ArcTan}\Big[1-\frac{\sqrt{2}\,(1-x)^{1/4}}{(1+x)^{1/4}}\Big]}{4\,\sqrt{2}}-\frac{\text{ArcTan}\Big[1+\frac{\sqrt{2}\,(1-x)^{1/4}}{(1+x)^{1/4}}\Big]}{4\,\sqrt{2}}-\frac{\text{Log}\Big[1+\frac{\sqrt{1-x}}{\sqrt{1+x}}-\frac{\sqrt{2}\,(1-x)^{1/4}}{(1+x)^{1/4}}\Big]}{8\,\sqrt{2}}+\frac{\text{Log}\Big[1+\frac{\sqrt{1-x}}{\sqrt{1+x}}+\frac{\sqrt{2}\,(1-x)^{1/4}}{(1+x)^{1/4}}\Big]}{8\,\sqrt{2}}$$

Result (type 5, 51 leaves):

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

Problem 882: Result unnecessarily involves higher level functions.

$$\int \frac{(1+x)^{1/4}}{(1-x)^{1/4}}\,dx$$

Optimal (type 3, 186 leaves, 12 steps):

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

Result (type 5, 43 leaves):

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

Problem 883: Result unnecessarily involves higher level functions.

$$\int \frac{(1+x)^{1/4}}{(1-x)^{1/4}\,x}\,dx$$

Optimal (type 3, 203 leaves, 16 steps):

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

Result (type 6, 119 leaves):

$$\left(72\,(1+x)^{5/4}\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{4},1,\frac{9}{4},\frac{1+x}{2},1+x\right]\right)\Big/\left(5\,(1-x)^{1/4}\,x\left(18\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{4},1,\frac{9}{4},\frac{1+x}{2},1+x\right]+(1+x)\left(8\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{4},2,\frac{13}{4},\frac{1+x}{2},1+x\right]+\text{AppellF1}\left[\frac{9}{4},\frac{5}{4},1,\frac{13}{4},\frac{1+x}{2},1+x\right]\right)\right)\right)$$

Problem 884: Result unnecessarily involves higher level functions.

$$\int \frac{(1+x)^{1/4}}{(1-x)^{1/4}\,x^2}\,dx$$

Optimal (type 3, 62 leaves, 5 steps):

$$-\frac{(1-x)^{3/4}(1+x)^{1/4}}{x}-\text{ArcTan}\left[\frac{(1+x)^{1/4}}{(1-x)^{1/4}}\right]-\text{ArcTanh}\left[\frac{(1+x)^{1/4}}{(1-x)^{1/4}}\right]$$

Result (type 6, 106 leaves):

$$\left(-1+x^2-\left(4x^2\,\text{AppellF1}\left[1,\frac{1}{4},\frac{3}{4},2,\frac{1}{x},-\frac{1}{x}\right]\right)\Big/\left(8x\,\text{AppellF1}\left[1,\frac{1}{4},\frac{3}{4},2,\frac{1}{x},-\frac{1}{x}\right]-3\,\text{AppellF1}\left[2,\frac{1}{4},\frac{7}{4},3,\frac{1}{x},-\frac{1}{x}\right]+\text{AppellF1}\left[2,\frac{5}{4},\frac{3}{4},3,\frac{1}{x},-\frac{1}{x}\right]\right)\right)\Big/\left((1-x)^{1/4}\,x\,(1+x)^{3/4}\right)$$

Problem 885: Result unnecessarily involves higher level functions.

$$\int\frac{(1+x)^{1/4}}{(1-x)^{1/4}x^3}\,dx$$

Optimal (type 3, 91 leaves, 6 steps):

$$-\frac{(1-x)^{3/4}(1+x)^{1/4}}{4x}-\frac{(1-x)^{3/4}(1+x)^{5/4}}{2x^2}-\frac{1}{4}\text{ArcTan}\left[\frac{(1+x)^{1/4}}{(1-x)^{1/4}}\right]-\frac{1}{4}\text{ArcTanh}\left[\frac{(1+x)^{1/4}}{(1-x)^{1/4}}\right]$$

Result (type 6, 114 leaves):

$$\left(2-\frac{2}{x^2}-\frac{3}{x}+3x-\left(4x\,\text{AppellF1}\left[1,\frac{1}{4},\frac{3}{4},2,\frac{1}{x},-\frac{1}{x}\right]\right)\Big/\left(8x\,\text{AppellF1}\left[1,\frac{1}{4},\frac{3}{4},2,\frac{1}{x},-\frac{1}{x}\right]-3\,\text{AppellF1}\left[2,\frac{1}{4},\frac{7}{4},3,\frac{1}{x},-\frac{1}{x}\right]+\text{AppellF1}\left[2,\frac{5}{4},\frac{3}{4},3,\frac{1}{x},-\frac{1}{x}\right]\right)\right)\Big/\left(4\,(1-x)^{1/4}(1+x)^{3/4}\right)$$

Problem 886: Result unnecessarily involves higher level functions.

$$\int\frac{(1+x)^{1/4}}{(1-x)^{1/4}x^4}\,dx$$

Optimal (type 3, 114 leaves, 8 steps):

$$-\frac{(1-x)^{3/4}(1+x)^{1/4}}{3x^3}-\frac{5(1-x)^{3/4}(1+x)^{1/4}}{12x^2}-\frac{11(1-x)^{3/4}(1+x)^{1/4}}{24x}-\frac{3}{8}\text{ArcTan}\left[\frac{(1+x)^{1/4}}{(1-x)^{1/4}}\right]-\frac{3}{8}\text{ArcTanh}\left[\frac{(1+x)^{1/4}}{(1-x)^{1/4}}\right]$$

Result (type 6, 119 leaves):

$$\left(10-\frac{8}{x^3}-\frac{10}{x^2}-\frac{3}{x}+11\,x-\left(36\,x\,\text{AppellF1}\left[1,\frac{1}{4},\frac{3}{4},2,\frac{1}{x},-\frac{1}{x}\right]\right)\Big/\left(8\,x\,\text{AppellF1}\left[1,\frac{1}{4},\frac{3}{4},2,\frac{1}{x},-\frac{1}{x}\right]-3\,\text{AppellF1}\left[2,\frac{1}{4},\frac{7}{4},3,\frac{1}{x},-\frac{1}{x}\right]+\text{AppellF1}\left[2,\frac{5}{4},\frac{3}{4},3,\frac{1}{x},-\frac{1}{x}\right]\right)\right)\Big/\left(24\,(1-x)^{1/4}\,(1+x)^{3/4}\right)$$

Problem 887: Result unnecessarily involves higher level functions.

$$\int\frac{(1+x)^{1/4}}{(1-x)^{1/4}\,x^5}\,dx$$

Optimal (type 3, 137 leaves, 9 steps):

$$-\frac{(1-x)^{3/4}\,(1+x)^{1/4}}{4\,x^4}-\frac{7\,(1-x)^{3/4}\,(1+x)^{1/4}}{24\,x^3}-\frac{29\,(1-x)^{3/4}\,(1+x)^{1/4}}{96\,x^2}-\frac{83\,(1-x)^{3/4}\,(1+x)^{1/4}}{192\,x}-\frac{11}{64}\,\text{ArcTan}\left[\frac{(1+x)^{1/4}}{(1-x)^{1/4}}\right]-\frac{11}{64}\,\text{ArcTanh}\left[\frac{(1+x)^{1/4}}{(1-x)^{1/4}}\right]$$

Result (type 6, 124 leaves):

$$\left(58-\frac{48}{x^4}-\frac{56}{x^3}-\frac{10}{x^2}-\frac{27}{x}+83\,x-\left(132\,x\,\text{AppellF1}\left[1,\frac{1}{4},\frac{3}{4},2,\frac{1}{x},-\frac{1}{x}\right]\right)\Big/\left(8\,x\,\text{AppellF1}\left[1,\frac{1}{4},\frac{3}{4},2,\frac{1}{x},-\frac{1}{x}\right]-3\,\text{AppellF1}\left[2,\frac{1}{4},\frac{7}{4},3,\frac{1}{x},-\frac{1}{x}\right]+\text{AppellF1}\left[2,\frac{5}{4},\frac{3}{4},3,\frac{1}{x},-\frac{1}{x}\right]\right)\right)\Big/\left(192\,(1-x)^{1/4}\,(1+x)^{3/4}\right)$$

Problem 888: Result unnecessarily involves higher level functions.

$$\int\frac{x^3}{(a+b\,x)^{3/4}\,(c+d\,x)^{1/4}}\,dx$$

Optimal (type 3, 259 leaves, 7 steps):

$$\frac{x^2\,(a+b\,x)^{1/4}\,(c+d\,x)^{3/4}}{3\,b\,d}+\frac{1}{96\,b^3\,d^3}(a+b\,x)^{1/4}\,(c+d\,x)^{3/4}\,\left(45\,b^2\,c^2+54\,a\,b\,c\,d+77\,a^2\,d^2-4\,b\,d\,(9\,b\,c+11\,a\,d)\,x\right)-\frac{\left(15\,b^3\,c^3+15\,a\,b^2\,c^2\,d+21\,a^2\,b\,c\,d^2+77\,a^3\,d^3\right)\,\text{ArcTan}\left[\frac{d^{1/4}\,(a+b\,x)^{1/4}}{b^{1/4}\,(c+d\,x)^{1/4}}\right]}{64\,b^{15/4}\,d^{13/4}}-\frac{\left(15\,b^3\,c^3+15\,a\,b^2\,c^2\,d+21\,a^2\,b\,c\,d^2+77\,a^3\,d^3\right)\,\text{ArcTanh}\left[\frac{d^{1/4}\,(a+b\,x)^{1/4}}{b^{1/4}\,(c+d\,x)^{1/4}}\right]}{64\,b^{15/4}\,d^{13/4}}$$

Result (type 5, 168 leaves):

$$\left((c+d x)^{3/4} \left(d (a+b x) \left(77 a^2 d^2+2 a b d (27 c-22 d x)+b^2 \left(45 c^2-36 c d x+32 d^2 x^2\right)\right)-\left(15 b^3 c^3+15 a b^2 c^2 d+21 a^2 b c d^2+77 a^3 d^3\right) \left(\frac{d (a+b x)}{-b c+a d}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\frac{b (c+d x)}{b c-a d}\right]\right)\right)\Big/\left(96 b^3 d^4 (a+b x)^{3/4}\right)$$

Problem 889: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 201 leaves, 7 steps):

$$-\frac{(5 b c+7 a d) (a+b x)^{1/4} (c+d x)^{3/4}}{8 b^2 d^2}+\frac{x (a+b x)^{1/4} (c+d x)^{3/4}}{2 b d}+\frac{\left(5 b^2 c^2+6 a b c d+21 a^2 d^2\right) \text{ArcTan}\left[\frac{d^{1/4} (a+b x)^{1/4}}{b^{1/4} (c+d x)^{1/4}}\right]}{16 b^{11/4} d^{9/4}}+\frac{\left(5 b^2 c^2+6 a b c d+21 a^2 d^2\right) \text{ArcTanh}\left[\frac{d^{1/4} (a+b x)^{1/4}}{b^{1/4} (c+d x)^{1/4}}\right]}{16 b^{11/4} d^{9/4}}$$

Result (type 5, 123 leaves):

$$\left((c+d x)^{3/4} \left(-3 d (a+b x) (5 b c+7 a d-4 b d x)+\left(5 b^2 c^2+6 a b c d+21 a^2 d^2\right) \left(\frac{d (a+b x)}{-b c+a d}\right)^{3/4} \text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\frac{b (c+d x)}{b c-a d}\right]\right)\right)\Big/\left(24 b^2 d^3 (a+b x)^{3/4}\right)$$

Problem 890: Result unnecessarily involves higher level functions.

$$\int \frac{x}{(a+b x)^{3/4} (c+d x)^{1/4}} \, dx$$

Optimal (type 3, 130 leaves, 6 steps):

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

Result (type 5, 95 leaves):

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

Problem 891: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(a+b x)^{3/4} (c+d x)^{1/4}} \, dx$$

Optimal (type 3, 85 leaves, 5 steps):

$$\frac{2 \operatorname{ArcTan}\left[\frac{d^{1/4} (a+b x)^{1/4}}{b^{1/4} (c+d x)^{1/4}}\right]}{b^{3/4} d^{1/4}}+\frac{2 \operatorname{ArcTanh}\left[\frac{d^{1/4} (a+b x)^{1/4}}{b^{1/4} (c+d x)^{1/4}}\right]}{b^{3/4} d^{1/4}}$$

Result (type 5, 73 leaves):

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

Problem 892: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x (a+b x)^{3/4} (c+d x)^{1/4}} \, dx$$

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

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

Result (type 6, 146 leaves):

$$\left(8 b d x \text{AppellF1}\left[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b x},-\frac{c}{d x}\right]\right) \Big/ \left((a+b x)^{3/4} (c+d x)^{1/4} \left(-8 b d x \text{AppellF1}\left[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b x},-\frac{c}{d x}\right]+ b c \text{AppellF1}\left[2,\frac{3}{4},\frac{5}{4},3,-\frac{a}{b x},-\frac{c}{d x}\right]+3 a d \text{AppellF1}\left[2,\frac{7}{4},\frac{1}{4},3,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\right)$$

Problem 893: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 134 leaves, 5 steps):

$$-\frac{(a+b x)^{1/4} (c+d x)^{3/4}}{a c x}+\frac{(3 b c+a d) \operatorname{ArcTan}\left[\frac{c^{1/4} (a+b x)^{1/4}}{a^{1/4} (c+d x)^{1/4}}\right]}{2 a^{7/4} c^{5/4}}+\frac{(3 b c+a d) \operatorname{ArcTanh}\left[\frac{c^{1/4} (a+b x)^{1/4}}{a^{1/4} (c+d x)^{1/4}}\right]}{2 a^{7/4} c^{5/4}}$$

Result (type 6, 180 leaves):

$$\left(-(a+b x)(c+d x)+\left(2 b d(3 b c+a d) x^2 \text{AppellF1}\left[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\Big/\left(8 b d x \text{AppellF1}\left[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b x},-\frac{c}{d x}\right]-b c \text{AppellF1}\left[2,\frac{3}{4},\frac{5}{4},3,-\frac{a}{b x},-\frac{c}{d x}\right]-3 a d \text{AppellF1}\left[2,\frac{7}{4},\frac{1}{4},3,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\right)\Big/\left(a c x (a+b x)^{3/4}(c+d x)^{1/4}\right)$$

Problem 894: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^3 (a+b x)^{3/4} (c+d x)^{1/4}} \, dx$$

Optimal (type 3, 206 leaves, 7 steps):

$$-\frac{(a+b x)^{1/4}(c+d x)^{3/4}}{2 a c x^2}+\frac{(7 b c+5 a d)(a+b x)^{1/4}(c+d x)^{3/4}}{8 a^2 c^2 x}-\frac{\left(21 b^2 c^2+6 a b c d+5 a^2 d^2\right) \text{ArcTan}\left[\frac{c^{1/4}(a+b x)^{1/4}}{a^{1/4}(c+d x)^{1/4}}\right]}{16 a^{11/4} c^{9/4}}-\frac{\left(21 b^2 c^2+6 a b c d+5 a^2 d^2\right) \text{ArcTanh}\left[\frac{c^{1/4}(a+b x)^{1/4}}{a^{1/4}(c+d x)^{1/4}}\right]}{16 a^{11/4} c^{9/4}}$$

Result (type 6, 211 leaves):

$$\left((a+b x)(c+d x)(-4 a c+7 b c x+5 a d x)+\left(2 b d\left(21 b^2 c^2+6 a b c d+5 a^2 d^2\right) x^3 \text{AppellF1}\left[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\Big/\left(-8 b d x \text{AppellF1}\left[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b x},-\frac{c}{d x}\right]+b c \text{AppellF1}\left[2,\frac{3}{4},\frac{5}{4},3,-\frac{a}{b x},-\frac{c}{d x}\right]+3 a d \text{AppellF1}\left[2,\frac{7}{4},\frac{1}{4},3,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\right)\Big/\left(8 a^2 c^2 x^2 (a+b x)^{3/4}(c+d x)^{1/4}\right)$$

Problem 895: Result unnecessarily involves higher level functions.

$$\int \frac{1}{x^4 (a+b x)^{3/4} (c+d x)^{1/4}} \, dx$$

Optimal (type 3, 288 leaves, 8 steps):

$$-\frac{(a+b x)^{1/4} (c+d x)^{3/4}}{3 a c x^3}+\frac{(11 b c+9 a d) (a+b x)^{1/4} (c+d x)^{3/4}}{24 a^2 c^2 x^2}-\frac{\left(77 b^2 c^2+54 a b c d+45 a^2 d^2\right) (a+b x)^{1/4} (c+d x)^{3/4}}{96 a^3 c^3 x}+\frac{\left(77 b^3 c^3+21 a b^2 c^2 d+15 a^2 b c d^2+15 a^3 d^3\right) \text{ArcTan}\left[\frac{c^{1/4} (a+b x)^{1/4}}{a^{1/4} (c+d x)^{1/4}}\right]}{64 a^{15/4} c^{13/4}}+\frac{\left(77 b^3 c^3+21 a b^2 c^2 d+15 a^2 b c d^2+15 a^3 d^3\right) \text{ArcTanh}\left[\frac{c^{1/4} (a+b x)^{1/4}}{a^{1/4} (c+d x)^{1/4}}\right]}{64 a^{15/4} c^{13/4}}$$

Result (type 6, 259 leaves):

$$-\left(\left((a+b x) (c+d x) \left(77 b^2 c^2 x^2+2 a b c x (-22 c+27 d x)+a^2 \left(32 c^2-36 c d x+45 d^2 x^2\right)\right)+\left(6 b d \left(77 b^3 c^3+21 a b^2 c^2 d+15 a^2 b c d^2+15 a^3 d^3\right) x^4 \text{AppellF1}\left[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\Big/\left(-8 b d x \text{AppellF1}\left[1,\frac{3}{4},\frac{1}{4},2,-\frac{a}{b x},-\frac{c}{d x}\right]+b c \text{AppellF1}\left[2,\frac{3}{4},\frac{5}{4},3,-\frac{a}{b x},-\frac{c}{d x}\right]+3 a d \text{AppellF1}\left[2,\frac{7}{4},\frac{1}{4},3,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\right)\Big/\left(96 a^3 c^3 x^3 (a+b x)^{3/4} (c+d x)^{1/4}\right)\right)$$

Problem 896: Result unnecessarily involves higher level functions.

$$\int \frac{(e x)^{3/2}}{(1-x)^{1/4} (1+x)^{1/4}} \, dx$$

Optimal (type 3, 244 leaves, 13 steps):

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

Result (type 5, 39 leaves):

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

Problem 897: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(1-x)^{1/4} \sqrt{e x} (1+x)^{1/4}} \, dx$$

Optimal (type 3, 216 leaves, 12 steps):

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

Result (type 5, 23 leaves):

$$\frac{2\,x\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},x^2\right]}{\sqrt{e\,x}}$$

Problem 901: Result unnecessarily involves higher level functions.

$$\int\frac{(e\,x)^{5/2}}{(1-x)^{1/4}\,(1+x)^{1/4}}\,dx$$

Optimal (type 4, 93 leaves, 6 steps):

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

Result (type 5, 39 leaves):

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

Problem 902: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{e\,x}}{(1-x)^{1/4}\,(1+x)^{1/4}}\,dx$$

Optimal (type 4, 60 leaves, 5 steps):

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

Result (type 5, 25 leaves):

$$\frac{2}{3}\,x\,\sqrt{e\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},x^2\right]$$

Problem 903: Result unnecessarily involves higher level functions.

$$\int\frac{1}{(1-x)^{1/4}\,(e\,x)^{3/2}\,(1+x)^{1/4}}\,dx$$

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

$$-\frac{2\left(1-\frac{1}{x^2}\right)^{1/4}\sqrt{e\,x}\ \text{EllipticE}\left[\frac{\text{ArcCsc}[x]}{2},2\right]}{e^2\left(1-x^2\right)^{1/4}}$$

Result (type 5, 44 leaves):

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

Problem 904: Result unnecessarily involves higher level functions.

$$\int\frac{1}{(1-x)^{1/4}\,(e\,x)^{7/2}\,(1+x)^{1/4}}\,dx$$

Optimal (type 4, 70 leaves, 5 steps):

$$-\frac{2\left(1-x^2\right)^{3/4}}{5\,e\,(e\,x)^{5/2}}-\frac{4\left(1-\frac{1}{x^2}\right)^{1/4}\sqrt{e\,x}\ \text{EllipticE}\left[\frac{\text{ArcCsc}[x]}{2},2\right]}{5\,e^4\left(1-x^2\right)^{1/4}}$$

Result (type 5, 51 leaves):

$$\frac{x\left(-6\left(1-x^2\right)^{3/4}\left(1+2\,x^2\right)-8\,x^4\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},x^2\right]\right)}{15\,(e\,x)^{7/2}}$$

Problem 905: Result unnecessarily involves higher level functions.

$$\int\frac{1}{(1-x)^{1/4}\,(e\,x)^{11/2}\,(1+x)^{1/4}}\,dx$$

Optimal (type 4, 95 leaves, 6 steps):

$$-\frac{2\left(1-x^2\right)^{3/4}}{9\,e\,(e\,x)^{9/2}}-\frac{4\left(1-x^2\right)^{3/4}}{15\,e^3\,(e\,x)^{5/2}}-\frac{8\left(1-\frac{1}{x^2}\right)^{1/4}\sqrt{e\,x}\ \text{EllipticE}\left[\frac{\text{ArcCsc}[x]}{2},2\right]}{15\,e^6\left(1-x^2\right)^{1/4}}$$

Result (type 5, 60 leaves):

$$-\frac{1}{45\,e^6\,x^5}2\,\sqrt{e\,x}\,\left(\left(1-x^2\right)^{3/4}\left(5+6\,x^2+12\,x^4\right)+8\,x^6\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},x^2\right]\right)$$

Problem 930: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 203 leaves, 3 steps):

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

Result (type 6, 126 leaves):

$$\left(5 a c x^4 (a+b x)^n \text{AppellF1}\left[4, -n, 2, 5, -\frac{b x}{a}, -\frac{d x}{c}\right]\right) \Big/ \left(4 (c+d x)^2 \left(5 a c \text{AppellF1}\left[4, -n, 2, 5, -\frac{b x}{a}, -\frac{d x}{c}\right] + b c n x \text{AppellF1}\left[5, 1-n, 2, 6, -\frac{b x}{a}, -\frac{d x}{c}\right] - 2 a d x \text{AppellF1}\left[5, -n, 3, 6, -\frac{b x}{a}, -\frac{d x}{c}\right]\right)\right)$$

Problem 931: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 122 leaves, 3 steps):

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

Result (type 6, 126 leaves):

$$\left(4 a c x^3 (a+b x)^n \text{AppellF1}\left[3, -n, 2, 4, -\frac{b x}{a}, -\frac{d x}{c}\right]\right) \Big/ \left(3 (c+d x)^2 \left(4 a c \text{AppellF1}\left[3, -n, 2, 4, -\frac{b x}{a}, -\frac{d x}{c}\right] + b c n x \text{AppellF1}\left[4, 1-n, 2, 5, -\frac{b x}{a}, -\frac{d x}{c}\right] - 2 a d x \text{AppellF1}\left[4, -n, 3, 5, -\frac{b x}{a}, -\frac{d x}{c}\right]\right)\right)$$

Problem 932: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 99 leaves, 2 steps):

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

Result (type 6, 126 leaves):

$$\left(3\,a\,c\,x^2\,(a+b\,x)^n\,\text{AppellF1}\left[2,\,-n,\,2,\,3,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\Big/\left(2\,(c+d\,x)^2\left(3\,a\,c\,\text{AppellF1}\left[2,\,-n,\,2,\,3,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]+b\,c\,n\,x\,\text{AppellF1}\left[3,\,1-n,\,2,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]-2\,a\,d\,x\,\text{AppellF1}\left[3,\,-n,\,3,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\right)$$

Problem 933: Unable to integrate problem.

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

Optimal (type 5, 52 leaves, 1 step):

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

Result (type 8, 17 leaves):

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

Problem 934: Unable to integrate problem.

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

Optimal (type 5, 139 leaves, 4 steps):

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

Result (type 8, 20 leaves):

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

Problem 935: Unable to integrate problem.

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

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

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

Result (type 8, 20 leaves):

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

Problem 938: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 61 leaves, 3 steps):

$$\frac{2 (b x)^{7/2} (c+d x)^n \left(1+\frac{d x}{c}\right)^{-n} \text{AppellF1}\left[\frac{7}{2}, -n, 1, \frac{9}{2}, -\frac{d x}{c}, -\frac{f x}{e}\right]}{7 b e}$$

Result (type 6, 239 leaves):

$$\frac{1}{15 f^3 x^2} 2 (b x)^{5/2} (c+d x)^n \left(-\left(\left(45 c e^4 \text{AppellF1}\left[\frac{1}{2}, -n, 1, \frac{3}{2}, -\frac{d x}{c}, -\frac{f x}{e}\right]\right) \Big/ \left((e+f x) \left(3 c e \text{AppellF1}\left[\frac{1}{2}, -n, 1, \frac{3}{2}, -\frac{d x}{c}, -\frac{f x}{e}\right]+2 d e n x \text{AppellF1}\left[\frac{3}{2}, 1-n, 1, \frac{5}{2}, -\frac{d x}{c}, -\frac{f x}{e}\right]-2 c f x \text{AppellF1}\left[\frac{3}{2}, -n, 2, \frac{5}{2}, -\frac{d x}{c}, -\frac{f x}{e}\right]\right)\right)\right)+\left(1+\frac{d x}{c}\right)^{-n} \left(15 e^2 \text{Hypergeometric2F1}\left[\frac{1}{2}, -n, \frac{3}{2}, -\frac{d x}{c}\right]+f x \left(-5 e \text{Hypergeometric2F1}\left[\frac{3}{2}, -n, \frac{5}{2}, -\frac{d x}{c}\right]+3 f x \text{Hypergeometric2F1}\left[\frac{5}{2}, -n, \frac{7}{2}, -\frac{d x}{c}\right]\right)\right)\right)$$

Problem 939: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 61 leaves, 3 steps):

$$\frac{2 (b x)^{7/2} (c+d x)^n \left(1+\frac{d x}{c}\right)^{-n} \text{AppellF1}\left[\frac{7}{2},-n,2,\frac{9}{2},-\frac{d x}{c},-\frac{f x}{e}\right]}{7 b e^2}$$

Result (type 6, 345 leaves):

$$\frac{1}{3 f^3} 2 b^2 \sqrt{b x} (c+d x)^n \left(\left(27 c e^3 \text{AppellF1}\left[\frac{1}{2},-n,1,\frac{3}{2},-\frac{d x}{c},-\frac{f x}{e}\right]\right) \Big/ \left((e+f x) \left(3 c e \text{AppellF1}\left[\frac{1}{2},-n,1,\frac{3}{2},-\frac{d x}{c},-\frac{f x}{e}\right]+2 d e n x \text{AppellF1}\left[\frac{3}{2},1-n,1,\frac{5}{2},-\frac{d x}{c},-\frac{f x}{e}\right]-2 c f x \text{AppellF1}\left[\frac{3}{2},-n,2,\frac{5}{2},-\frac{d x}{c},-\frac{f x}{e}\right]\right)\right)-\left(9 c e^4 \text{AppellF1}\left[\frac{1}{2},-n,2,\frac{3}{2},-\frac{d x}{c},-\frac{f x}{e}\right]\right) \Big/ \left((e+f x)^2 \left(3 c e \text{AppellF1}\left[\frac{1}{2},-n,2,\frac{3}{2},-\frac{d x}{c},-\frac{f x}{e}\right]+2 d e n x \text{AppellF1}\left[\frac{3}{2},1-n,2,\frac{5}{2},-\frac{d x}{c},-\frac{f x}{e}\right]-4 c f x \text{AppellF1}\left[\frac{3}{2},-n,3,\frac{5}{2},-\frac{d x}{c},-\frac{f x}{e}\right]\right)\right)+\left(1+\frac{d x}{c}\right)^{-n} \left(-6 e \text{Hypergeometric2F1}\left[\frac{1}{2},-n,\frac{3}{2},-\frac{d x}{c}\right]+f x \text{Hypergeometric2F1}\left[\frac{3}{2},-n,\frac{5}{2},-\frac{d x}{c}\right]\right)\right)$$

Problem 942: Result more than twice size of optimal antiderivative.

$$\int \frac{(b x)^m (c+d x)^n}{e+f x} \, dx$$

Optimal (type 6, 63 leaves, 2 steps):

$$\frac{(b x)^{1+m} (c+d x)^n \left(1+\frac{d x}{c}\right)^{-n} \text{AppellF1}\left[1+m,-n,1,2+m,-\frac{d x}{c},-\frac{f x}{e}\right]}{b e (1+m)}$$

Result (type 6, 153 leaves):

$$\left(c e (2+m) x (b x)^m (c+d x)^n \text{AppellF1}\left[1+m,-n,1,2+m,-\frac{d x}{c},-\frac{f x}{e}\right]\right) \Big/ \left((1+m) (e+f x) \left(c e (2+m) \text{AppellF1}\left[1+m,-n,1,2+m,-\frac{d x}{c},-\frac{f x}{e}\right]+x \left(d e n \text{AppellF1}\left[2+m,1-n,1,3+m,-\frac{d x}{c},-\frac{f x}{e}\right]-c f \text{AppellF1}\left[2+m,-n,2,3+m,-\frac{d x}{c},-\frac{f x}{e}\right]\right)\right)\right)$$

Problem 943: Result more than twice size of optimal antiderivative.

$$\int \frac{(b x)^m (c+d x)^n}{(e+f x)^2} \, dx$$

Optimal (type 6, 63 leaves, 2 steps):

$$\frac{(b x)^{1+m} (c+d x)^n \left(1+\frac{d x}{c}\right)^{-n} \text{AppellF1}\left[1+m,-n,2,2+m,-\frac{d x}{c},-\frac{f x}{e}\right]}{b e^2 (1+m)}$$

Result (type 6, 153 leaves):

$$\left(c e (2+m) x (b x)^m (c+d x)^n \text{AppellF1}\left[1+m,-n,2,2+m,-\frac{d x}{c},-\frac{f x}{e}\right]\right) \Big/ \left((1+m) (e+f x)^2 \left(c e (2+m) \text{AppellF1}\left[1+m,-n,2,2+m,-\frac{d x}{c},-\frac{f x}{e}\right]+ x \left(d e n \text{AppellF1}\left[2+m,1-n,2,3+m,-\frac{d x}{c},-\frac{f x}{e}\right]- 2 c f \text{AppellF1}\left[2+m,-n,3,3+m,-\frac{d x}{c},-\frac{f x}{e}\right]\right)\right)\right)$$

Problem 944: Result more than twice size of optimal antiderivative.

$$\int (b x)^m (c+d x)^n (e+f x)^p \, dx$$

Optimal (type 6, 81 leaves, 3 steps):

$$\frac{1}{b (1+m)} (b x)^{1+m} (c+d x)^n \left(1+\frac{d x}{c}\right)^{-n} (e+f x)^p \left(1+\frac{f x}{e}\right)^{-p} \text{AppellF1}\left[1+m,-n,-p,2+m,-\frac{d x}{c},-\frac{f x}{e}\right]$$

Result (type 6, 163 leaves):

$$\left(c e (2+m) x (b x)^m (c+d x)^n (e+f x)^p \text{AppellF1}\left[1+m,-n,-p,2+m,-\frac{d x}{c},-\frac{f x}{e}\right]\right) \Big/ \left((1+m) \left(c e (2+m) \text{AppellF1}\left[1+m,-n,-p,2+m,-\frac{d x}{c},-\frac{f x}{e}\right]+ x \left(d e n \text{AppellF1}\left[2+m,1-n,-p,3+m,-\frac{d x}{c},-\frac{f x}{e}\right]+ c f p \text{AppellF1}\left[2+m,-n,1-p,3+m,-\frac{d x}{c},-\frac{f x}{e}\right]\right)\right)\right)$$

Problem 946: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 206 leaves, 4 steps):

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

Result (type 6, 136 leaves):

$$\left(4 a c x^3 (a+b x)^n (c+d x)^p \text{AppellF1}\left[3,-n,-p,4,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\Big/\left(3 \left(4 a c \text{AppellF1}\left[3,-n,-p,4,-\frac{b x}{a},-\frac{d x}{c}\right]+b c n x \text{AppellF1}\left[4,1-n,-p,5,-\frac{b x}{a},-\frac{d x}{c}\right]+a d p x \text{AppellF1}\left[4,-n,1-p,5,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\right)$$

Problem 947: Result unnecessarily involves higher level functions.

$$\int x (a+b x)^n (c+d x)^p \, dx$$

Optimal (type 5, 117 leaves, 3 steps):

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

Result (type 6, 136 leaves):

$$\left(3 a c x^2 (a+b x)^n (c+d x)^p \text{AppellF1}\left[2,-n,-p,3,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\Big/\left(6 a c \text{AppellF1}\left[2,-n,-p,3,-\frac{b x}{a},-\frac{d x}{c}\right]+2 b c n x \text{AppellF1}\left[3,1-n,-p,4,-\frac{b x}{a},-\frac{d x}{c}\right]+2 a d p x \text{AppellF1}\left[3,-n,1-p,4,-\frac{b x}{a},-\frac{d x}{c}\right]\right)$$

Problem 949: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 85 leaves, 2 steps):

$$-\frac{1}{a (1+n)} (a+b x)^{1+n} (c+d x)^p \left(\frac{b (c+d x)}{b c-a d}\right)^{-p} \text{AppellF1}\left[1+n,-p,1,2+n,-\frac{d (a+b x)}{b c-a d},\frac{a+b x}{a}\right]$$

Result (type 6, 214 leaves):

$$\left(b\,d\,(-1+n+p)\,x\,(a+b\,x)^n\,(c+d\,x)^p\,\text{AppellF1}\left[-n-p,\,-n,\,-p,\,1-n-p,\,-\frac{a}{b\,x},\,-\frac{c}{d\,x}\right]\right)\Big/\left((n+p)\left(b\,d\,(-1+n+p)\,x\,\text{AppellF1}\left[-n-p,\,-n,\,-p,\,1-n-p,\,-\frac{a}{b\,x},\,-\frac{c}{d\,x}\right]-a\,d\,n\,\text{AppellF1}\left[1-n-p,\,1-n,\,-p,\,2-n-p,\,-\frac{a}{b\,x},\,-\frac{c}{d\,x}\right]-b\,c\,p\,\text{AppellF1}\left[1-n-p,\,-n,\,1-p,\,2-n-p,\,-\frac{a}{b\,x},\,-\frac{c}{d\,x}\right]\right)\right)$$

Problem 950: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 85 leaves, 2 steps):

$$\frac{1}{a^2\,(1+n)}b\,(a+b\,x)^{1+n}\,(c+d\,x)^p\left(\frac{b\,(c+d\,x)}{b\,c-a\,d}\right)^{-p}\text{AppellF1}\left[1+n,\,-p,\,2,\,2+n,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d},\,\frac{a+b\,x}{a}\right]$$

Result (type 6, 216 leaves):

$$\left(b\,d\,(-2+n+p)\,(a+b\,x)^n\,(c+d\,x)^p\,\text{AppellF1}\left[1-n-p,\,-n,\,-p,\,2-n-p,\,-\frac{a}{b\,x},\,-\frac{c}{d\,x}\right]\right)\Big/\left((-1+n+p)\left(b\,d\,(-2+n+p)\,x\,\text{AppellF1}\left[1-n-p,\,-n,\,-p,\,2-n-p,\,-\frac{a}{b\,x},\,-\frac{c}{d\,x}\right]-a\,d\,n\,\text{AppellF1}\left[2-n-p,\,1-n,\,-p,\,3-n-p,\,-\frac{a}{b\,x},\,-\frac{c}{d\,x}\right]-b\,c\,p\,\text{AppellF1}\left[2-n-p,\,-n,\,1-p,\,3-n-p,\,-\frac{a}{b\,x},\,-\frac{c}{d\,x}\right]\right)\right)$$

Problem 951: Result more than twice size of optimal antiderivative.

$$\int (b\,x)^{3/2}\,(c+d\,x)^n\,(e+f\,x)^p\,dx$$

Optimal (type 6, 79 leaves, 3 steps):

$$\frac{1}{5\,b}2\,(b\,x)^{5/2}\,(c+d\,x)^n\left(1+\frac{d\,x}{c}\right)^{-n}(e+f\,x)^p\left(1+\frac{f\,x}{e}\right)^{-p}\text{AppellF1}\left[\frac{5}{2},\,-n,\,-p,\,\frac{7}{2},\,-\frac{d\,x}{c},\,-\frac{f\,x}{e}\right]$$

Result (type 6, 159 leaves):

$$\left(14\,c\,e\,x\,(b\,x)^{3/2}\,(c+d\,x)^n\,(e+f\,x)^p\,\text{AppellF1}\left[\frac{5}{2},\,-n,\,-p,\,\frac{7}{2},\,-\frac{d\,x}{c},\,-\frac{f\,x}{e}\right]\right)\Big/\left(5\left(7\,c\,e\,\text{AppellF1}\left[\frac{5}{2},\,-n,\,-p,\,\frac{7}{2},\,-\frac{d\,x}{c},\,-\frac{f\,x}{e}\right]+2\,x\left(d\,e\,n\,\text{AppellF1}\left[\frac{7}{2},\,1-n,\,-p,\,\frac{9}{2},\,-\frac{d\,x}{c},\,-\frac{f\,x}{e}\right]+c\,f\,p\,\text{AppellF1}\left[\frac{7}{2},\,-n,\,1-p,\,\frac{9}{2},\,-\frac{d\,x}{c},\,-\frac{f\,x}{e}\right]\right)\right)\right)$$

Problem 953: Result more than twice size of optimal antiderivative.

$$\int \frac{(c+d\,x)^n\,(e+f\,x)^p}{\sqrt{b\,x}}\,dx$$

Optimal (type 6, 77 leaves, 3 steps):

$$\frac{1}{b}2\sqrt{b\,x}\,(c+d\,x)^n\left(1+\frac{d\,x}{c}\right)^{-n}(e+f\,x)^p\left(1+\frac{f\,x}{e}\right)^{-p}\text{AppellF1}\left[\frac{1}{2},-n,-p,\frac{3}{2},-\frac{d\,x}{c},-\frac{f\,x}{e}\right]$$

Result (type 6, 157 leaves):

$$\left(6\,c\,e\,x\,(c+d\,x)^n\,(e+f\,x)^p\,\text{AppellF1}\left[\frac{1}{2},-n,-p,\frac{3}{2},-\frac{d\,x}{c},-\frac{f\,x}{e}\right]\right)\Big/\left(\sqrt{b\,x}\left(3\,c\,e\,\text{AppellF1}\left[\frac{1}{2},-n,-p,\frac{3}{2},-\frac{d\,x}{c},-\frac{f\,x}{e}\right]+2\,d\,e\,n\,x\,\text{AppellF1}\left[\frac{3}{2},1-n,-p,\frac{5}{2},-\frac{d\,x}{c},-\frac{f\,x}{e}\right]+2\,c\,f\,p\,x\,\text{AppellF1}\left[\frac{3}{2},-n,1-p,\frac{5}{2},-\frac{d\,x}{c},-\frac{f\,x}{e}\right]\right)\right)$$

Problem 954: Result more than twice size of optimal antiderivative.

$$\int (b\,x)^m\,(\pi+d\,x)^n\,(e+f\,x)^p\,dx$$

Optimal (type 6, 49 leaves, 1 step):

$$\frac{e^p\,\pi^n\,(b\,x)^{1+m}\,\text{AppellF1}\left[1+m,-n,-p,2+m,-\frac{d\,x}{\pi},-\frac{f\,x}{e}\right]}{b\,(1+m)}$$

Result (type 6, 163 leaves):

$$\left(e\,(2+m)\,\pi\,x\,(b\,x)^m\,(\pi+d\,x)^n\,(e+f\,x)^p\,\text{AppellF1}\left[1+m,-n,-p,2+m,-\frac{d\,x}{\pi},-\frac{f\,x}{e}\right]\right)\Big/\left((1+m)\left(e\,(2+m)\,\pi\,\text{AppellF1}\left[1+m,-n,-p,2+m,-\frac{d\,x}{\pi},-\frac{f\,x}{e}\right]+x\left(d\,e\,n\,\text{AppellF1}\left[2+m,1-n,-p,3+m,-\frac{d\,x}{\pi},-\frac{f\,x}{e}\right]+f\,p\,\pi\,\text{AppellF1}\left[2+m,-n,1-p,3+m,-\frac{d\,x}{\pi},-\frac{f\,x}{e}\right]\right)\right)\right)$$

Problem 955: Result more than twice size of optimal antiderivative.

$$\int (b\,x)^m\,(\pi+d\,x)^n\,(e+f\,x)^p\,dx$$

Optimal (type 6, 65 leaves, 2 steps):

$$\frac{1}{b\,(1+m)}\pi^n\,(b\,x)^{1+m}\,(e+f\,x)^p\left(1+\frac{f\,x}{e}\right)^{-p}\text{AppellF1}\left[1+m,-n,-p,2+m,-\frac{d\,x}{\pi},-\frac{f\,x}{e}\right]$$

Result (type 6, 163 leaves):

$$\left(e\,(2+m)\,\pi\,x\,(b\,x)^m\,(\pi+d\,x)^n\,(e+f\,x)^p\,\text{AppellF1}\left[1+m,\,-n,\,-p,\,2+m,\,-\frac{d\,x}{\pi},\,-\frac{f\,x}{e}\right]\right)\Bigg/$$
$$\left((1+m)\left(e\,(2+m)\,\pi\,\text{AppellF1}\left[1+m,\,-n,\,-p,\,2+m,\,-\frac{d\,x}{\pi},\,-\frac{f\,x}{e}\right]+\right.\right.$$
$$x\left(d\,e\,n\,\text{AppellF1}\left[2+m,\,1-n,\,-p,\,3+m,\,-\frac{d\,x}{\pi},\,-\frac{f\,x}{e}\right]+\right.$$
$$\left.\left.\left.f\,p\,\pi\,\text{AppellF1}\left[2+m,\,-n,\,1-p,\,3+m,\,-\frac{d\,x}{\pi},\,-\frac{f\,x}{e}\right]\right)\right)\right)$$

Problem 956: Result more than twice size of optimal antiderivative.

$$\int (b\,x)^{5/2}\,(\pi+d\,x)^n\,(\mathbb{e}+f\,x)^p\,dx$$

Optimal (type 6, 47 leaves, 1 step):

$$\frac{2\,\mathbb{e}^p\,\pi^n\,(b\,x)^{7/2}\,\text{AppellF1}\left[\frac{7}{2},\,-n,\,-p,\,\frac{9}{2},\,-\frac{d\,x}{\pi},\,-\frac{f\,x}{\mathbb{e}}\right]}{7\,b}$$

Result (type 6, 159 leaves):

$$\left(18\,\mathbb{e}\,\pi\,x\,(b\,x)^{5/2}\,(\pi+d\,x)^n\,(\mathbb{e}+f\,x)^p\,\text{AppellF1}\left[\frac{7}{2},\,-n,\,-p,\,\frac{9}{2},\,-\frac{d\,x}{\pi},\,-\frac{f\,x}{\mathbb{e}}\right]\right)\Bigg/$$
$$\left(7\left(9\,\mathbb{e}\,\pi\,\text{AppellF1}\left[\frac{7}{2},\,-n,\,-p,\,\frac{9}{2},\,-\frac{d\,x}{\pi},\,-\frac{f\,x}{\mathbb{e}}\right]+\right.\right.$$
$$2\,x\left(d\,\mathbb{e}\,n\,\text{AppellF1}\left[\frac{9}{2},\,1-n,\,-p,\,\frac{11}{2},\,-\frac{d\,x}{\pi},\,-\frac{f\,x}{\mathbb{e}}\right]+\right.$$
$$\left.\left.\left.f\,p\,\pi\,\text{AppellF1}\left[\frac{9}{2},\,-n,\,1-p,\,\frac{11}{2},\,-\frac{d\,x}{\pi},\,-\frac{f\,x}{\mathbb{e}}\right]\right)\right)\right)$$

Problem 957: Result more than twice size of optimal antiderivative.

$$\int (b\,x)^{5/2}\,(\pi+d\,x)^n\,(e+f\,x)^p\,dx$$

Optimal (type 6, 63 leaves, 2 steps):

$$\frac{2\,\pi^n\,(b\,x)^{7/2}\,(e+f\,x)^p\,\left(1+\frac{f\,x}{e}\right)^{-p}\,\text{AppellF1}\left[\frac{7}{2},\,-n,\,-p,\,\frac{9}{2},\,-\frac{d\,x}{\pi},\,-\frac{f\,x}{e}\right]}{7\,b}$$

Result (type 6, 159 leaves):

$$\left(18\,e\,\pi\,x\,(b\,x)^{5/2}\,(\pi+d\,x)^n\,(e+f\,x)^p\,\text{AppellF1}\left[\frac{7}{2},\,-n,\,-p,\,\frac{9}{2},\,-\frac{d\,x}{\pi},\,-\frac{f\,x}{e}\right]\right)\Bigg/$$
$$\left(7\left(9\,e\,\pi\,\text{AppellF1}\left[\frac{7}{2},\,-n,\,-p,\,\frac{9}{2},\,-\frac{d\,x}{\pi},\,-\frac{f\,x}{e}\right]+\right.\right.$$
$$2\,x\left(d\,e\,n\,\text{AppellF1}\left[\frac{9}{2},\,1-n,\,-p,\,\frac{11}{2},\,-\frac{d\,x}{\pi},\,-\frac{f\,x}{e}\right]+\right.$$
$$\left.\left.\left.f\,p\,\pi\,\text{AppellF1}\left[\frac{9}{2},\,-n,\,1-p,\,\frac{11}{2},\,-\frac{d\,x}{\pi},\,-\frac{f\,x}{e}\right]\right)\right)\right)$$

Problem 958: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 295 leaves, 4 steps):

$$\frac{x^2 (a+b x)^{1+n} (c+d x)^{1-n}}{4 b d}+\frac{1}{24 b^3 d^3}(a+b x)^{1+n} (c+d x)^{1-n} \left(2 a b c d \left(3-n^2\right)+a^2 d^2 \left(6-5 n+n^2\right)+b^2 c^2 \left(6+5 n+n^2\right)-2 b d (a d (3-n)+b c (3+n)) x\right)-\frac{1}{24 b^4 d^3 (1+n)}\left(3 a b^2 c^2 d \left(2+n-2 n^2-n^3\right)+a^3 d^3 \left(6-11 n+6 n^2-n^3\right)+3 a^2 b c d^2 \left(2-n-2 n^2+n^3\right)+b^3 c^3 \left(6+11 n+6 n^2+n^3\right)\right) (a+b x)^{1+n} (c+d x)^{-n} \left(\frac{b (c+d x)}{b c-a d}\right)^n \text{Hypergeometric2F1}\left[n, 1+n, 2+n, -\frac{d (a+b x)}{b c-a d}\right]$$

Result (type 6, 130 leaves):

$$\left(5 a c x^4 (a+b x)^n (c+d x)^{-n} \text{AppellF1}\left[4, -n, n, 5, -\frac{b x}{a}, -\frac{d x}{c}\right]\right) \Big/ \left(20 a c \text{AppellF1}\left[4, -n, n, 5, -\frac{b x}{a}, -\frac{d x}{c}\right]+4 b c n x \text{AppellF1}\left[5, 1-n, n, 6, -\frac{b x}{a}, -\frac{d x}{c}\right]-4 a d n x \text{AppellF1}\left[5, -n, 1+n, 6, -\frac{b x}{a}, -\frac{d x}{c}\right]\right)$$

Problem 959: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 199 leaves, 4 steps):

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

Result (type 6, 130 leaves):

$$\left(4 a c x^3 (a+b x)^n (c+d x)^{-n} \text{AppellF1}\left[3, -n, n, 4, -\frac{b x}{a}, -\frac{d x}{c}\right]\right) \Big/ \left(12 a c \text{AppellF1}\left[3, -n, n, 4, -\frac{b x}{a}, -\frac{d x}{c}\right]+3 b c n x \text{AppellF1}\left[4, 1-n, n, 5, -\frac{b x}{a}, -\frac{d x}{c}\right]-3 a d n x \text{AppellF1}\left[4, -n, 1+n, 5, -\frac{b x}{a}, -\frac{d x}{c}\right]\right)$$

Problem 960: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 124 leaves, 3 steps):

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

Result (type 6, 130 leaves):

$$\left(3\,a\,c\,x^2\,(a+b\,x)^n\,(c+d\,x)^{-n}\,\text{AppellF1}\left[2,\,-n,\,n,\,3,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\Big/\left(6\,a\,c\,\text{AppellF1}\left[2,\,-n,\,n,\,3,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]+2\,n\,x\left(b\,c\,\text{AppellF1}\left[3,\,1-n,\,n,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]-a\,d\,\text{AppellF1}\left[3,\,-n,\,1+n,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\right)$$

Problem 962: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 108 leaves, 5 steps):

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

Result (type 6, 216 leaves):

$$\left(a\,(-b\,c+a\,d)\,(2+n)\,(a+b\,x)^{1+n}\,(c+d\,x)^{-n}\,\text{AppellF1}\left[1+n,\,n,\,1,\,2+n,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\,1+\frac{b\,x}{a}\right]\right)\Big/\left(b\,(1+n)\,x\left(a\,(-b\,c+a\,d)\,(2+n)\,\text{AppellF1}\left[1+n,\,n,\,1,\,2+n,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\,1+\frac{b\,x}{a}\right]+(a+b\,x)\left((-b\,c+a\,d)\,\text{AppellF1}\left[2+n,\,n,\,2,\,3+n,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\,1+\frac{b\,x}{a}\right]+a\,d\,n\,\text{AppellF1}\left[2+n,\,1+n,\,1,\,3+n,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\,1+\frac{b\,x}{a}\right]\right)\right)\right)$$

Problem 963: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 62 leaves, 1 step):

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

Result (type 6, 141 leaves):

$$-\left(\left(2 b d (a+b x)^n (c+d x)^{-n} \text{AppellF1}\left[1, -n, n, 2, -\frac{a}{b x}, -\frac{c}{d x}\right]\right) \Big/ \left(2 b d x \text{AppellF1}\left[1, -n, n, 2, -\frac{a}{b x}, -\frac{c}{d x}\right] + a d n \text{AppellF1}\left[2, 1-n, n, 3, -\frac{a}{b x}, -\frac{c}{d x}\right] - b c n \text{AppellF1}\left[2, -n, 1+n, 3, -\frac{a}{b x}, -\frac{c}{d x}\right]\right)\right)$$

Problem 964: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 117 leaves, 2 steps):

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

Result (type 6, 146 leaves):

$$-\left(\left(3 b d (a+b x)^n (c+d x)^{-n} \text{AppellF1}\left[2, -n, n, 3, -\frac{a}{b x}, -\frac{c}{d x}\right]\right) \Big/ \left(6 b d x^2 \text{AppellF1}\left[2, -n, n, 3, -\frac{a}{b x}, -\frac{c}{d x}\right] + 2 a d n x \text{AppellF1}\left[3, 1-n, n, 4, -\frac{a}{b x}, -\frac{c}{d x}\right] - 2 b c n x \text{AppellF1}\left[3, -n, 1+n, 4, -\frac{a}{b x}, -\frac{c}{d x}\right]\right)\right)$$

Problem 965: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 194 leaves, 4 steps):

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

Result (type 6, 146 leaves):

$$-\left(\left(4 b d (a+b x)^n (c+d x)^{-n} \text{AppellF1}\left[3,-n,n,4,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\Big/\left(3 x^2 \left(4 b d x \text{AppellF1}\left[3,-n,n,4,-\frac{a}{b x},-\frac{c}{d x}\right]+a d n \text{AppellF1}\left[4,1-n,n,5,-\frac{a}{b x},-\frac{c}{d x}\right]-b c n \text{AppellF1}\left[4,-n,1+n,5,-\frac{a}{b x},-\frac{c}{d x}\right]\right)\right)\right)$$

Problem 966: Result unnecessarily involves higher level functions.

$$\int (1-x)^n x^3 (1+x)^{-n} \, dx$$

Optimal (type 5, 105 leaves, 3 steps):

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

Result (type 6, 79 leaves):

$$\left(5 (1-x)^n x^4 (1+x)^{-n} \text{AppellF1}[4,-n,n,5,x,-x]\right)\Big/\left(4 \left(5 \text{AppellF1}[4,-n,n,5,x,-x]-n x \left(\text{AppellF1}[5,1-n,n,6,x,-x]+\text{AppellF1}[5,-n,1+n,6,x,-x]\right)\right)\right)$$

Problem 967: Result unnecessarily involves higher level functions.

$$\int (1-x)^n x^2 (1+x)^{-n} \, dx$$

Optimal (type 5, 94 leaves, 3 steps):

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

Result (type 6, 79 leaves):

$$\left(4 (1-x)^n x^3 (1+x)^{-n} \text{AppellF1}[3,-n,n,4,x,-x]\right)\Big/\left(3 \left(4 \text{AppellF1}[3,-n,n,4,x,-x]-n x \left(\text{AppellF1}[4,1-n,n,5,x,-x]+\text{AppellF1}[4,-n,1+n,5,x,-x]\right)\right)\right)$$

Problem 968: Result unnecessarily involves higher level functions.

$$\int (1-x)^n\, x\, (1+x)^{-n}\, dx$$

Optimal (type 5, 61 leaves, 2 steps):

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

Result (type 6, 79 leaves):

$$\left(3\,(1-x)^n\, x^2\,(1+x)^{-n}\,\text{AppellF1}[2,-n,n,3,x,-x]\right)\Big/\left(2\left(3\,\text{AppellF1}[2,-n,n,3,x,-x]-n\, x\,(\text{AppellF1}[3,1-n,n,4,x,-x]+\text{AppellF1}[3,-n,1+n,4,x,-x])\right)\right)$$

Problem 970: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(1-x)^n\,(1+x)^{-n}}{x}\, dx$$

Optimal (type 5, 68 leaves, 3 steps):

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

Result (type 6, 140 leaves):

$$\left(2\,(2+n)\,(1-x)^{1+n}\,(1+x)^{-n}\,\text{AppellF1}\left[1+n,\, n,\, 1,\, 2+n,\, \frac{1-x}{2},\, 1-x\right]\right)\Big/$$
$$\left((1+n)\, x\left(-2\,(2+n)\,\text{AppellF1}\left[1+n,\, n,\, 1,\, 2+n,\, \frac{1-x}{2},\, 1-x\right]+(-1+x)\left(2\,\text{AppellF1}\left[2+n,\, n,\, 2,\, 3+n,\, \frac{1-x}{2},\, 1-x\right]+n\,\text{AppellF1}\left[2+n,\, 1+n,\, 1,\, 3+n,\, \frac{1-x}{2},\, 1-x\right]\right)\right)\right)$$

Problem 971: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 44 leaves, 1 step):

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

Result (type 6, 90 leaves):

$$-\left(\left(2\,(1-x)^n\,(1+x)^{-n}\,\text{AppellF1}\left[1,-n,n,2,\frac{1}{x},-\frac{1}{x}\right]\right)\Big/\left(2\,x\,\text{AppellF1}\left[1,-n,n,2,\frac{1}{x},-\frac{1}{x}\right]-n\left(\text{AppellF1}\left[2,1-n,n,3,\frac{1}{x},-\frac{1}{x}\right]+\text{AppellF1}\left[2,-n,1+n,3,\frac{1}{x},-\frac{1}{x}\right]\right)\right)\right)$$

Problem 972: Result unnecessarily involves higher level functions.

$$\int\frac{(1-x)^n\,(1+x)^{-n}}{x^3}\,dx$$

Optimal (type 5, 71 leaves, 2 steps):

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

Result (type 6, 95 leaves):

$$-\left(\left(3\,(1-x)^n\,(1+x)^{-n}\,\text{AppellF1}\left[2,-n,n,3,\frac{1}{x},-\frac{1}{x}\right]\right)\Big/\left(2\,x\left(3\,x\,\text{AppellF1}\left[2,-n,n,3,\frac{1}{x},-\frac{1}{x}\right]-n\left(\text{AppellF1}\left[3,1-n,n,4,\frac{1}{x},-\frac{1}{x}\right]+\text{AppellF1}\left[3,-n,1+n,4,\frac{1}{x},-\frac{1}{x}\right]\right)\right)\right)\right)$$

Problem 973: Result unnecessarily involves higher level functions.

$$\int\frac{(1-x)^n\,(1+x)^{-n}}{x^4}\,dx$$

Optimal (type 5, 105 leaves, 4 steps):

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

Result (type 6, 95 leaves):

$$-\left(\left(4\,(1-x)^n\,(1+x)^{-n}\,\text{AppellF1}\left[3,-n,n,4,\frac{1}{x},-\frac{1}{x}\right]\right)\Big/\left(3\,x^2\left(4\,x\,\text{AppellF1}\left[3,-n,n,4,\frac{1}{x},-\frac{1}{x}\right]-n\left(\text{AppellF1}\left[4,1-n,n,5,\frac{1}{x},-\frac{1}{x}\right]+\text{AppellF1}\left[4,-n,1+n,5,\frac{1}{x},-\frac{1}{x}\right]\right)\right)\right)\right)$$

Problem 981: Result unnecessarily involves higher level functions.

$$\int x^m\,(3-2\,a\,x)^{-1+n}\,(6+4\,a\,x)^n\,dx$$

Optimal (type 5, 104 leaves, 5 steps):

$$\frac{2^n \times 3^{-1+2n} x^{1+m} \text{Hypergeometric2F1}\left[\frac{1+m}{2}, 1-n, \frac{3+m}{2}, \frac{4 a^2 x^2}{9}\right]}{1+m} + \frac{2^{1+n} \times 9^{-1+n} a x^{2+m} \text{Hypergeometric2F1}\left[\frac{2+m}{2}, 1-n, \frac{4+m}{2}, \frac{4 a^2 x^2}{9}\right]}{2+m}$$

Result (type 6, 168 leaves):

$$-\left(\left(3 (2+m) x^{1+m} \left(18-8 a^2 x^2\right)^n \text{AppellF1}\left[1+m, 1-n, -n, 2+m, \frac{2 a x}{3}, -\frac{2 a x}{3}\right]\right) \Big/ \left((1+m) (-3+2 a x) \left(3 (2+m) \text{AppellF1}\left[1+m, 1-n, -n, 2+m, \frac{2 a x}{3}, -\frac{2 a x}{3}\right] + 2 a x \left(-(-1+n) \text{AppellF1}\left[2+m, 2-n, -n, 3+m, \frac{2 a x}{3}, -\frac{2 a x}{3}\right] + n \text{HypergeometricPFQ}\left[\left\{1+\frac{m}{2}, 1-n\right\}, \left\{2+\frac{m}{2}\right\}, \frac{4 a^2 x^2}{9}\right]\right)\right)\right)\right)$$

Problem 982: Result unnecessarily involves higher level functions.

$$\int x^m (3-2 a x)^{-2+n} (6+4 a x)^n \, dx$$

Optimal (type 5, 158 leaves, 8 steps):

$$\frac{2^n \times 9^{-1+n} x^{1+m} \text{Hypergeometric2F1}\left[\frac{1+m}{2}, 2-n, \frac{3+m}{2}, \frac{4 a^2 x^2}{9}\right]}{1+m} + \frac{2^{2+n} \times 3^{-3+2n} a x^{2+m} \text{Hypergeometric2F1}\left[\frac{2+m}{2}, 2-n, \frac{4+m}{2}, \frac{4 a^2 x^2}{9}\right]}{2+m} + \frac{2^{2+n} \times 9^{-2+n} a^2 x^{3+m} \text{Hypergeometric2F1}\left[\frac{3+m}{2}, 2-n, \frac{5+m}{2}, \frac{4 a^2 x^2}{9}\right]}{3+m}$$

Result (type 6, 163 leaves):

$$\left(3 (2+m) x^{1+m} (3-2 a x)^{-2+n} (6+4 a x)^n \text{AppellF1}\left[1+m, 2-n, -n, 2+m, \frac{2 a x}{3}, -\frac{2 a x}{3}\right]\right) \Big/ \left((1+m) \left(3 (2+m) \text{AppellF1}\left[1+m, 2-n, -n, 2+m, \frac{2 a x}{3}, -\frac{2 a x}{3}\right] + 2 a x \left(n \text{AppellF1}\left[2+m, 2-n, 1-n, 3+m, \frac{2 a x}{3}, -\frac{2 a x}{3}\right] - (-2+n) \text{AppellF1}\left[2+m, 3-n, -n, 3+m, \frac{2 a x}{3}, -\frac{2 a x}{3}\right]\right)\right)\right)$$

Problem 983: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 79 leaves, 3 steps):

$$\frac{1}{1+m} a\, x^{1+m} (a+b x)^n \left(1+\frac{b x}{a}\right)^{-n} (c+d x)^n \left(1+\frac{d x}{c}\right)^{-n} \text{AppellF1}\left[1+m,-1-n,-n,2+m,-\frac{b x}{a},-\frac{d x}{c}\right]$$

Result (type 6, 308 leaves):

$$\frac{1}{2+m} a\, c\, x^{1+m} (a+b x)^n (c+d x)^n \left(\left(a (2+m)^2 \text{AppellF1}\left[1+m,-n,-n,2+m,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\Big/\right.$$
$$\left((1+m)\left(a\, c\, (2+m)\, \text{AppellF1}\left[1+m,-n,-n,2+m,-\frac{b x}{a},-\frac{d x}{c}\right]+n\, x\left(b\, c\, \text{AppellF1}\left[2+m,1-n,\right.\right.\right.\right.$$
$$\left.\left.\left.-n,3+m,-\frac{b x}{a},-\frac{d x}{c}\right]+a\, d\, \text{AppellF1}\left[2+m,-n,1-n,3+m,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\right)\right)+$$
$$\left(b (3+m)\, x\, \text{AppellF1}\left[2+m,-n,-n,3+m,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\Big/$$
$$\left(a\, c\, (3+m)\, \text{AppellF1}\left[2+m,-n,-n,3+m,-\frac{b x}{a},-\frac{d x}{c}\right]+\right.$$
$$n\, x\left(b\, c\, \text{AppellF1}\left[3+m,1-n,-n,4+m,-\frac{b x}{a},-\frac{d x}{c}\right]+\right.$$
$$\left.\left.\left.a\, d\, \text{AppellF1}\left[3+m,-n,1-n,4+m,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\right)\right)$$

Problem 986: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 70 leaves, 1 step):

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

Result (type 6, 139 leaves):

$$-\left(\left(4 \left(\frac{a+x}{a}\right)^{n/2} \left(1-\frac{x}{a}\right)^{-n/2} \text{AppellF1}\left[1,-\frac{n}{2},\frac{n}{2},2,-\frac{a}{x},\frac{a}{x}\right]\right)\Big/\right.$$
$$\left(4\, x\, \text{AppellF1}\left[1,-\frac{n}{2},\frac{n}{2},2,-\frac{a}{x},\frac{a}{x}\right]+\right.$$
$$\left.\left.a\, n\left(\text{AppellF1}\left[2,1-\frac{n}{2},\frac{n}{2},3,-\frac{a}{x},\frac{a}{x}\right]+\text{AppellF1}\left[2,-\frac{n}{2},\frac{2+n}{2},3,-\frac{a}{x},\frac{a}{x}\right]\right)\right)\right)$$

Problem 988: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

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

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

Result (type 6, 182 leaves):

$$\left(2 (-2+n) (1-a x)^{1-n} (1+a x)^n \text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2} (1-a x),1-a x\right]\right) \Big/ \left(a (1-n) x \left(-2 (-2+n) \text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2} (1-a x),1-a x\right]+(-1+a x) \left(n \text{AppellF1}\left[2-n,1-n,1,3-n,\frac{1}{2} (1-a x),1-a x\right]-2 \text{AppellF1}\left[2-n,-n,2,3-n,\frac{1}{2} (1-a x),1-a x\right]\right)\right)\right)$$

Problem 989: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 106 leaves, 3 steps):

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

Result (type 6, 158 leaves):

$$a (1+a x)^n \left(-\left(\left(2 (1-a x)^{-n} \text{AppellF1}\left[1,n,-n,2,\frac{1}{a x},-\frac{1}{a x}\right]\right) \Big/ \left(2 a x \text{AppellF1}\left[1,n,-n,2,\frac{1}{a x},-\frac{1}{a x}\right]+n \left(\text{AppellF1}\left[2,n,1-n,3,\frac{1}{a x},-\frac{1}{a x}\right]+\text{AppellF1}\left[2,1+n,-n,3,\frac{1}{a x},-\frac{1}{a x}\right]\right)\right)\right)-\frac{2^{-n} (1+a x) \text{Hypergeometric2F1}\left[n,1+n,2+n,\frac{1}{2} (1+a x)\right]}{1+n}\right)$$

Problem 994: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 142 leaves, 6 steps):

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

Result (type 6, 262 leaves):

$$(a-bx)^{-n}(a+bx)^n\left(\left(2a^2(-2+n)(a-bx)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{a-bx}{2a},1-\frac{bx}{a}\right]\right)\Big/\left(b(-1+n)x\left(2a(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{a-bx}{2a},1-\frac{bx}{a}\right]+(a-bx)\left(n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{a-bx}{2a},1-\frac{bx}{a}\right]-2\,\text{AppellF1}\left[2-n,-n,2,3-n,\frac{a-bx}{2a},1-\frac{bx}{a}\right]\right)\right)\right)+\frac{(a+bx)\left(1-\frac{a+bx}{2a}\right)^n\text{Hypergeometric2F1}\left[n,1+n,2+n,\frac{a+bx}{2a}\right]}{1+n}\right)$$

Problem 995: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 140 leaves, 5 steps):

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

Result (type 6, 324 leaves):

$$2\,a\,(a-b\,x)^{-n}\,(a+b\,x)^{n}\left(-\left(\left(b\,\text{AppellF1}\left[1,n,-n,2,\frac{a}{b\,x},-\frac{a}{b\,x}\right]\right)\Big/\left(2\,b\,x\,\text{AppellF1}\left[1,n,-n,2,\frac{a}{b\,x},-\frac{a}{b\,x}\right]+a\,n\left(\text{AppellF1}\left[2,n,1-n,3,\frac{a}{b\,x},-\frac{a}{b\,x}\right]+\text{AppellF1}\left[2,1+n,-n,3,\frac{a}{b\,x},-\frac{a}{b\,x}\right]\right)\right)\right)+\left((-2+n)\,(a-b\,x)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{a-b\,x}{2\,a},1-\frac{b\,x}{a}\right]\right)\Big/\left((-1+n)\,x\left(2\,a\,(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{a-b\,x}{2\,a},1-\frac{b\,x}{a}\right]+(a-b\,x)\left(n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{a-b\,x}{2\,a},1-\frac{b\,x}{a}\right]-2\,\text{AppellF1}\left[2-n,-n,2,3-n,\frac{a-b\,x}{2\,a},1-\frac{b\,x}{a}\right]\right)\right)\right)\right)$$

Problem 996: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a-b\,x)^{-n}\,(a+b\,x)^{1+n}}{x^3}\,dx$$

Optimal (type 5, 62 leaves, 1 step):

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

Result (type 6, 254 leaves):

$$\frac{1}{2}\,b\,(a-b\,x)^{-n}\,(a+b\,x)^{n}\left(-\left(\left(4\,b\,\text{AppellF1}\left[1,n,-n,2,\frac{a}{b\,x},-\frac{a}{b\,x}\right]\right)\Big/\left(2\,b\,x\,\text{AppellF1}\left[1,n,-n,2,\frac{a}{b\,x},-\frac{a}{b\,x}\right]+a\,n\left(\text{AppellF1}\left[2,n,1-n,3,\frac{a}{b\,x},-\frac{a}{b\,x}\right]+\text{AppellF1}\left[2,1+n,-n,3,\frac{a}{b\,x},-\frac{a}{b\,x}\right]\right)\right)\right)-\left(3\,a\,\text{AppellF1}\left[2,n,-n,3,\frac{a}{b\,x},-\frac{a}{b\,x}\right]\right)\Big/\left(x\left(3\,b\,x\,\text{AppellF1}\left[2,n,-n,3,\frac{a}{b\,x},-\frac{a}{b\,x}\right]+a\,n\left(\text{AppellF1}\left[3,n,1-n,4,\frac{a}{b\,x},-\frac{a}{b\,x}\right]+\text{AppellF1}\left[3,1+n,-n,4,\frac{a}{b\,x},-\frac{a}{b\,x}\right]\right)\right)\right)\right)$$

Problem 997: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 101 leaves, 2 steps):

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

Result (type 6, 255 leaves):

$$\frac{1}{6 x^2} b (a-b x)^{-n} (a+b x)^n \left(-\left(\left(9 b x \text{AppellF1}\left[2, n, -n, 3, \frac{a}{b x}, -\frac{a}{b x}\right]\right) \Big/ \left(3 b x \text{AppellF1}\left[2, n, -n, 3, \frac{a}{b x}, -\frac{a}{b x}\right] + a n \left(\text{AppellF1}\left[3, n, 1-n, 4, \frac{a}{b x}, -\frac{a}{b x}\right] + \text{AppellF1}\left[3, 1+n, -n, 4, \frac{a}{b x}, -\frac{a}{b x}\right]\right)\right)\right) - \left(8 a \text{AppellF1}\left[3, n, -n, 4, \frac{a}{b x}, -\frac{a}{b x}\right]\right) \Big/ \left(4 b x \text{AppellF1}\left[3, n, -n, 4, \frac{a}{b x}, -\frac{a}{b x}\right] + a n \left(\text{AppellF1}\left[4, n, 1-n, 5, \frac{a}{b x}, -\frac{a}{b x}\right] + \text{AppellF1}\left[4, 1+n, -n, 5, \frac{a}{b x}, -\frac{a}{b x}\right]\right)\right)\right)$$

Problem 998: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 139 leaves, 4 steps):

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

Result (type 6, 255 leaves):

$$\frac{1}{12 x^3} b (a-b x)^{-n} (a+b x)^n \left(-\left(\left(16 b x \text{AppellF1}\left[3, n, -n, 4, \frac{a}{b x}, -\frac{a}{b x}\right]\right) \Big/ \left(4 b x \text{AppellF1}\left[3, n, -n, 4, \frac{a}{b x}, -\frac{a}{b x}\right] + a n \left(\text{AppellF1}\left[4, n, 1-n, 5, \frac{a}{b x}, -\frac{a}{b x}\right] + \text{AppellF1}\left[4, 1+n, -n, 5, \frac{a}{b x}, -\frac{a}{b x}\right]\right)\right)\right) - \left(15 a \text{AppellF1}\left[4, n, -n, 5, \frac{a}{b x}, -\frac{a}{b x}\right]\right) \Big/ \left(5 b x \text{AppellF1}\left[4, n, -n, 5, \frac{a}{b x}, -\frac{a}{b x}\right] + a n \left(\text{AppellF1}\left[5, n, 1-n, 6, \frac{a}{b x}, -\frac{a}{b x}\right] + \text{AppellF1}\left[5, 1+n, -n, 6, \frac{a}{b x}, -\frac{a}{b x}\right]\right)\right)\right)$$

Problem 999: Result more than twice size of optimal antiderivative.

$$\int (a+b x) (A+B x) (d+e x)^4 \, dx$$

Optimal (type 1, 77 leaves, 2 steps):

$$\frac{(b d-a e) (B d-A e) (d+e x)^5}{5 e^3}-\frac{(2 b B d-A b e-a B e) (d+e x)^6}{6 e^3}+\frac{b B (d+e x)^7}{7 e^3}$$

Result (type 1, 172 leaves):

$$a A d^4 x+\frac{1}{2} d^3 (A b d+a B d+4 a A e) x^2+\frac{1}{3} d^2 (2 a e (2 B d+3 A e)+b d (B d+4 A e)) x^3+\frac{1}{2} d e (a e (3 B d+2 A e)+b d (2 B d+3 A e)) x^4+\frac{1}{5} e^2 (a e (4 B d+A e)+2 b d (3 B d+2 A e)) x^5+\frac{1}{6} e^3 (4 b B d+A b e+a B e) x^6+\frac{1}{7} b B e^4 x^7$$

Problem 1010: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^2 (A+B x) (d+e x)^4 \, dx$$

Optimal (type 1, 120 leaves, 2 steps):

$$-\frac{(b d-a e)^2 (B d-A e) (d+e x)^5}{5 e^4}+\frac{(b d-a e) (3 b B d-2 A b e-a B e) (d+e x)^6}{6 e^4}-\frac{b (3 b B d-A b e-2 a B e) (d+e x)^7}{7 e^4}+\frac{b^2 B (d+e x)^8}{8 e^4}$$

Result (type 1, 283 leaves):

$$a^2 A d^4 x+\frac{1}{2} a d^3 (2 A b d+a B d+4 a A e) x^2+\frac{1}{3} d^2 \left(2 a B d (b d+2 a e)+A \left(b^2 d^2+8 a b d e+6 a^2 e^2\right)\right) x^3+\frac{1}{4} d \left(2 a^2 e^2 (3 B d+2 A e)+4 a b d e (2 B d+3 A e)+b^2 d^2 (B d+4 A e)\right) x^4+\frac{1}{5} e \left(a^2 e^2 (4 B d+A e)+4 a b d e (3 B d+2 A e)+2 b^2 d^2 (2 B d+3 A e)\right) x^5+\frac{1}{6} e^2 \left(a^2 B e^2+2 a b e (4 B d+A e)+2 b^2 d (3 B d+2 A e)\right) x^6+\frac{1}{7} b e^3 (4 b B d+A b e+2 a B e) x^7+\frac{1}{8} b^2 B e^4 x^8$$

Problem 1023: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^3 (A+B x) (d+e x)^5 \, dx$$

Optimal (type 1, 163 leaves, 2 steps):

$$\frac{(b d-a e)^3 (B d-A e) (d+e x)^6}{6 e^5}-\frac{(b d-a e)^2 (4 b B d-3 A b e-a B e) (d+e x)^7}{7 e^5}+\frac{3 b (b d-a e) (2 b B d-A b e-a B e) (d+e x)^8}{8 e^5}-\frac{b^2 (4 b B d-A b e-3 a B e) (d+e x)^9}{9 e^5}+\frac{b^3 B (d+e x)^{10}}{10 e^5}$$

Result (type 1, 471 leaves):

$$a^3 A d^5 x+\frac{1}{2} a^2 d^4 (3 A b d+a B d+5 a A e) x^2+\frac{1}{3} a d^3 \left(a B d (3 b d+5 a e)+A \left(3 b^2 d^2+15 a b d e+10 a^2 e^2\right)\right) x^3+\frac{1}{4} d^2 \left(a B d \left(3 b^2 d^2+15 a b d e+10 a^2 e^2\right)+A \left(b^3 d^3+15 a b^2 d^2 e+30 a^2 b d e^2+10 a^3 e^3\right)\right) x^4+\frac{1}{5} d \left(30 a^2 b d e^2 (B d+A e)+5 a^3 e^3 (2 B d+A e)+15 a b^2 d^2 e (B d+2 A e)+b^3 d^3 (B d+5 A e)\right) x^5+\frac{1}{6} e \left(30 a b^2 d^2 e (B d+A e)+15 a^2 b d e^2 (2 B d+A e)+a^3 e^3 (5 B d+A e)+5 b^3 d^3 (B d+2 A e)\right) x^6+\frac{1}{7} e^2 \left(a^3 B e^3+10 b^3 d^2 (B d+A e)+15 a b^2 d e (2 B d+A e)+3 a^2 b e^2 (5 B d+A e)\right) x^7+\frac{1}{8} b e^3 \left(3 a^2 B e^2+5 b^2 d (2 B d+A e)+3 a b e (5 B d+A e)\right) x^8+\frac{1}{9} b^2 e^4 (5 b B d+A b e+3 a B e) x^9+\frac{1}{10} b^3 B e^5 x^{10}$$

Problem 1024: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^3 (A+B x) (d+e x)^4 \, dx$$

Optimal (type 1, 163 leaves, 2 steps):

$$\frac{(b d-a e)^3 (B d-A e) (d+e x)^5}{5 e^5}-\frac{(b d-a e)^2 (4 b B d-3 A b e-a B e) (d+e x)^6}{6 e^5}+\frac{3 b (b d-a e) (2 b B d-A b e-a B e) (d+e x)^7}{7 e^5}-\frac{b^2 (4 b B d-A b e-3 a B e) (d+e x)^8}{8 e^5}+\frac{b^3 B (d+e x)^9}{9 e^5}$$

Result (type 1, 397 leaves):

$$a^3 A d^4 x + \frac{1}{2} a^2 d^3 \left(3 A b d + a B d + 4 a A e\right) x^2 +$$
$$\frac{1}{3} a d^2 \left(a B d \left(3 b d + 4 a e\right) + 3 A \left(b^2 d^2 + 4 a b d e + 2 a^2 e^2\right)\right) x^3 +$$
$$\frac{1}{4} d \left(3 a B d \left(b^2 d^2 + 4 a b d e + 2 a^2 e^2\right) + A \left(b^3 d^3 + 12 a b^2 d^2 e + 18 a^2 b d e^2 + 4 a^3 e^3\right)\right) x^4 +$$
$$\frac{1}{5} \left(a^3 e^3 \left(4 B d + A e\right) + 6 a^2 b d e^2 \left(3 B d + 2 A e\right) + 6 a b^2 d^2 e \left(2 B d + 3 A e\right) + b^3 d^3 \left(B d + 4 A e\right)\right) x^5 +$$
$$\frac{1}{6} e \left(a^3 B e^3 + 3 a^2 b e^2 \left(4 B d + A e\right) + 6 a b^2 d e \left(3 B d + 2 A e\right) + 2 b^3 d^2 \left(2 B d + 3 A e\right)\right) x^6 +$$
$$\frac{1}{7} b e^2 \left(3 a^2 B e^2 + 3 a b e \left(4 B d + A e\right) + 2 b^2 d \left(3 B d + 2 A e\right)\right) x^7 +$$
$$\frac{1}{8} b^2 e^3 \left(4 b B d + A b e + 3 a B e\right) x^8 + \frac{1}{9} b^3 B e^4 x^9$$

Problem 1034: Result more than twice size of optimal antiderivative.

$$\int \frac{(a + b x)^3 (A + B x)}{(d + e x)^6} \, dx$$

Optimal (type 1, 86 leaves, 2 steps):

$$-\frac{(B d - A e) (a + b x)^4}{5 e (b d - a e) (d + e x)^5} + \frac{(4 b B d + A b e - 5 a B e) (a + b x)^4}{20 e (b d - a e)^2 (d + e x)^4}$$

Result (type 1, 211 leaves):

$$-\frac{1}{20 e^5 (d + e x)^5} \left(a^3 e^3 \left(4 A e + B \left(d + 5 e x\right)\right) + a^2 b e^2 \left(3 A e \left(d + 5 e x\right) + 2 B \left(d^2 + 5 d e x + 10 e^2 x^2\right)\right) + \right.$$
$$a b^2 e \left(2 A e \left(d^2 + 5 d e x + 10 e^2 x^2\right) + 3 B \left(d^3 + 5 d^2 e x + 10 d e^2 x^2 + 10 e^3 x^3\right)\right) +$$
$$\left. b^3 \left(A e \left(d^3 + 5 d^2 e x + 10 d e^2 x^2 + 10 e^3 x^3\right) + 4 B \left(d^4 + 5 d^3 e x + 10 d^2 e^2 x^2 + 10 d e^3 x^3 + 5 e^4 x^4\right)\right)\right)$$

Problem 1039: Result more than twice size of optimal antiderivative.

$$\int (a + b x)^6 (A + B x) (d + e x)^8 \, dx$$

Optimal (type 1, 292 leaves, 2 steps):

$$-\frac{(b d-a e)^6 (B d-A e) (d+e x)^9}{9 e^8}+\frac{(b d-a e)^5 (7 b B d-6 A b e-a B e) (d+e x)^{10}}{10 e^8}-\frac{3 b (b d-a e)^4 (7 b B d-5 A b e-2 a B e) (d+e x)^{11}}{11 e^8}+\frac{5 b^2 (b d-a e)^3 (7 b B d-4 A b e-3 a B e) (d+e x)^{12}}{12 e^8}-\frac{5 b^3 (b d-a e)^2 (7 b B d-3 A b e-4 a B e) (d+e x)^{13}}{13 e^8}+\frac{3 b^4 (b d-a e) (7 b B d-2 A b e-5 a B e) (d+e x)^{14}}{14 e^8}-\frac{b^5 (7 b B d-A b e-6 a B e) (d+e x)^{15}}{15 e^8}+\frac{b^6 B (d+e x)^{16}}{16 e^8}$$

Result (type 1, 1385 leaves) :

$$a^6 A d^8 x + \frac{1}{2} a^5 d^7 (6 A b d + a B d + 8 a A e) x^2 +$$
$$\frac{1}{3} a^4 d^6 (2 a B d (3 b d + 4 a e) + A (15 b^2 d^2 + 48 a b d e + 28 a^2 e^2)) x^3 +$$
$$\frac{1}{4} a^3 d^5 (a B d (15 b^2 d^2 + 48 a b d e + 28 a^2 e^2) + 4 A (5 b^3 d^3 + 30 a b^2 d^2 e + 42 a^2 b d e^2 + 14 a^3 e^3)) x^4 +$$
$$\frac{1}{5} a^2 d^4 (4 a B d (5 b^3 d^3 + 30 a b^2 d^2 e + 42 a^2 b d e^2 + 14 a^3 e^3) + A (15 b^4 d^4 + 160 a b^3 d^3 e + 420 a^2 b^2 d^2 e^2 + 336 a^3 b d e^3 + 70 a^4 e^4)) x^5 +$$
$$\frac{1}{6} a d^3 (a B d (15 b^4 d^4 + 160 a b^3 d^3 e + 420 a^2 b^2 d^2 e^2 + 336 a^3 b d e^3 + 70 a^4 e^4) + 2 A (3 b^5 d^5 + 60 a b^4 d^4 e + 280 a^2 b^3 d^3 e^2 + 420 a^3 b^2 d^2 e^3 + 210 a^4 b d e^4 + 28 a^5 e^5)) x^6 +$$
$$\frac{1}{7} d^2 (2 a B d (3 b^5 d^5 + 60 a b^4 d^4 e + 280 a^2 b^3 d^3 e^2 + 420 a^3 b^2 d^2 e^3 + 210 a^4 b d e^4 + 28 a^5 e^5) + A (b^6 d^6 + 48 a b^5 d^5 e + 420 a^2 b^4 d^4 e^2 + 1120 a^3 b^3 d^3 e^3 + 1050 a^4 b^2 d^2 e^4 + 336 a^5 b d e^5 + 28 a^6 e^6)) x^7 +$$
$$\frac{1}{8} d (168 a^5 b d e^5 (2 B d + A e) + 420 a^2 b^4 d^4 e^2 (B d + 2 A e) + 4 a^6 e^6 (7 B d + 2 A e) + 210 a^4 b^2 d^2 e^4 (5 B d + 4 A e) + 280 a^3 b^3 d^3 e^3 (4 B d + 5 A e) + 24 a b^5 d^5 e (2 B d + 7 A e) + b^6 d^6 (B d + 8 A e)) x^8 +$$
$$\frac{1}{9} e (420 a^4 b^2 d^2 e^4 (2 B d + A e) + a^6 e^6 (8 B d + A e) + 168 a b^5 d^5 e (B d + 2 A e) + 24 a^5 b d e^5 (7 B d + 2 A e) + 280 a^3 b^3 d^3 e^3 (5 B d + 4 A e) + 210 a^2 b^4 d^4 e^2 (4 B d + 5 A e) + 4 b^6 d^6 (2 B d + 7 A e)) x^9 +$$
$$\frac{1}{10} e^2 (a^6 B e^6 + 560 a^3 b^3 d^2 e^3 (2 B d + A e) + 6 a^5 b e^5 (8 B d + A e) + 28 b^6 d^5 (B d + 2 A e) + 60 a^4 b^2 d e^4 (7 B d + 2 A e) + 210 a^2 b^4 d^3 e^2 (5 B d + 4 A e) + 84 a b^5 d^4 e (4 B d + 5 A e)) x^{10} +$$
$$\frac{1}{11} b e^3 (6 a^5 B e^5 + 420 a^2 b^3 d^2 e^2 (2 B d + A e) + 15 a^4 b e^4 (8 B d + A e) + 80 a^3 b^2 d e^3 (7 B d + 2 A e) + 84 a b^4 d^3 e (5 B d + 4 A e) + 14 b^5 d^4 (4 B d + 5 A e)) x^{11} +$$
$$\frac{1}{12} b^2 e^4 (15 a^4 B e^4 + 168 a b^3 d^2 e (2 B d + A e) + 20 a^3 b e^3 (8 B d + A e) + 60 a^2 b^2 d e^2 (7 B d + 2 A e) + 14 b^4 d^3 (5 B d + 4 A e)) x^{12} +$$
$$\frac{1}{13} b^3 e^5 (20 a^3 B e^3 + 28 b^3 d^2 (2 B d + A e) + 15 a^2 b e^2 (8 B d + A e) + 24 a b^2 d e (7 B d + 2 A e)) x^{13} +$$
$$\frac{1}{14} b^4 e^6 (15 a^2 B e^2 + 6 a b e (8 B d + A e) + 4 b^2 d (7 B d + 2 A e)) x^{14} +$$
$$\frac{1}{15} b^5 e^7 (8 b B d + A b e + 6 a B e) x^{15} + \frac{1}{16} b^6 B e^8 x^{16}$$

Problem 1040: Result more than twice size of optimal antiderivative.

$$\int (a + b x)^6 (A + B x) (d + e x)^7 \, dx$$

Optimal (type 1, 292 leaves, 2 steps):

$$-\frac{(b d-a e)^6 (B d-A e) (d+e x)^8}{8 e^8}+\frac{(b d-a e)^5 (7 b B d-6 A b e-a B e) (d+e x)^9}{9 e^8}-\frac{3 b (b d-a e)^4 (7 b B d-5 A b e-2 a B e) (d+e x)^{10}}{10 e^8}+\frac{5 b^2 (b d-a e)^3 (7 b B d-4 A b e-3 a B e) (d+e x)^{11}}{11 e^8}-\frac{5 b^3 (b d-a e)^2 (7 b B d-3 A b e-4 a B e) (d+e x)^{12}}{12 e^8}+\frac{3 b^4 (b d-a e) (7 b B d-2 A b e-5 a B e) (d+e x)^{13}}{13 e^8}-\frac{b^5 (7 b B d-A b e-6 a B e) (d+e x)^{14}}{14 e^8}+\frac{b^6 B (d+e x)^{15}}{15 e^8}$$

Result (type 1, 1224 leaves) :

$$a^6 A d^7 x + \frac{1}{2} a^5 d^6 (6 A b d + a B d + 7 a A e) x^2 +$$
$$\frac{1}{3} a^4 d^5 \left(a B d (6 b d + 7 a e) + 3 A \left(5 b^2 d^2 + 14 a b d e + 7 a^2 e^2\right)\right) x^3 +$$
$$\frac{1}{4} a^3 d^4 \left(3 a B d \left(5 b^2 d^2 + 14 a b d e + 7 a^2 e^2\right) + A \left(20 b^3 d^3 + 105 a b^2 d^2 e + 126 a^2 b d e^2 + 35 a^3 e^3\right)\right) x^4 +$$
$$\frac{1}{5} a^2 d^3 \left(a B d \left(20 b^3 d^3 + 105 a b^2 d^2 e + 126 a^2 b d e^2 + 35 a^3 e^3\right) + 5 A \left(3 b^4 d^4 + 28 a b^3 d^3 e + 63 a^2 b^2 d^2 e^2 + 42 a^3 b d e^3 + 7 a^4 e^4\right)\right) x^5 +$$
$$\frac{1}{6} a d^2 \left(5 a B d \left(3 b^4 d^4 + 28 a b^3 d^3 e + 63 a^2 b^2 d^2 e^2 + 42 a^3 b d e^3 + 7 a^4 e^4\right) + 3 A \left(2 b^5 d^5 + 35 a b^4 d^4 e + 140 a^2 b^3 d^3 e^2 + 175 a^3 b^2 d^2 e^3 + 70 a^4 b d e^4 + 7 a^5 e^5\right)\right) x^6 +$$
$$\frac{1}{7} d \left(3 a B d \left(2 b^5 d^5 + 35 a b^4 d^4 e + 140 a^2 b^3 d^3 e^2 + 175 a^3 b^2 d^2 e^3 + 70 a^4 b d e^4 + 7 a^5 e^5\right) + A \left(b^6 d^6 + 42 a b^5 d^5 e + 315 a^2 b^4 d^4 e^2 + 700 a^3 b^3 d^3 e^3 + 525 a^4 b^2 d^2 e^4 + 126 a^5 b d e^5 + 7 a^6 e^6\right)\right) x^7 +$$
$$\frac{1}{8} \left(700 a^3 b^3 d^3 e^3 (B d + A e) + 42 a^5 b d e^5 (3 B d + A e) + a^6 e^6 (7 B d + A e) + 42 a b^5 d^5 e (B d + 3 A e) + 105 a^4 b^2 d^2 e^4 (5 B d + 3 A e) + 105 a^2 b^4 d^4 e^2 (3 B d + 5 A e) + b^6 d^6 (B d + 7 A e)\right) x^8 +$$
$$\frac{1}{9} e \left(a^6 B e^6 + 525 a^2 b^4 d^3 e^2 (B d + A e) + 105 a^4 b^2 d e^4 (3 B d + A e) + 6 a^5 b e^5 (7 B d + A e) + 7 b^6 d^5 (B d + 3 A e) + 140 a^3 b^3 d^2 e^3 (5 B d + 3 A e) + 42 a b^5 d^4 e (3 B d + 5 A e)\right) x^9 +$$
$$\frac{1}{10} b e^2 \left(6 a^5 B e^5 + 210 a b^4 d^3 e (B d + A e) + 140 a^3 b^2 d e^3 (3 B d + A e) + 15 a^4 b e^4 (7 B d + A e) + 105 a^2 b^3 d^2 e^2 (5 B d + 3 A e) + 7 b^5 d^4 (3 B d + 5 A e)\right) x^{10} +$$
$$\frac{1}{11} b^2 e^3 \left(15 a^4 B e^4 + 35 b^4 d^3 (B d + A e) + 105 a^2 b^2 d e^2 (3 B d + A e) + 20 a^3 b e^3 (7 B d + A e) + 42 a b^3 d^2 e (5 B d + 3 A e)\right) x^{11} +$$
$$\frac{1}{12} b^3 e^4 \left(20 a^3 B e^3 + 42 a b^2 d e (3 B d + A e) + 15 a^2 b e^2 (7 B d + A e) + 7 b^3 d^2 (5 B d + 3 A e)\right) x^{12} +$$
$$\frac{1}{13} b^4 e^5 \left(15 a^2 B e^2 + 7 b^2 d (3 B d + A e) + 6 a b e (7 B d + A e)\right) x^{13} +$$
$$\frac{1}{14} b^5 e^6 (7 b B d + A b e + 6 a B e) x^{14} + \frac{1}{15} b^6 B e^7 x^{15}$$

Problem 1041: Result more than twice size of optimal antiderivative.

$$\int (a + b x)^6 (A + B x) (d + e x)^6 \, dx$$

Optimal (type 1, 290 leaves, 2 steps):

$$\frac{(A b-a B) (b d-a e)^6 (a+b x)^7}{7 b^8}+\frac{(b d-a e)^5 (b B d+6 A b e-7 a B e) (a+b x)^8}{8 b^8}+$$
$$\frac{e (b d-a e)^4 (2 b B d+5 A b e-7 a B e) (a+b x)^9}{3 b^8}+$$
$$\frac{e^2 (b d-a e)^3 (3 b B d+4 A b e-7 a B e) (a+b x)^{10}}{2 b^8}+$$
$$\frac{5 e^3 (b d-a e)^2 (4 b B d+3 A b e-7 a B e) (a+b x)^{11}}{11 b^8}+$$
$$\frac{e^4 (b d-a e) (5 b B d+2 A b e-7 a B e) (a+b x)^{12}}{4 b^8}+$$
$$\frac{e^5 (6 b B d+A b e-7 a B e) (a+b x)^{13}}{13 b^8}+\frac{B e^6 (a+b x)^{14}}{14 b^8}$$

Result (type 1, 1069 leaves):

$$a^6 A d^6 x+\frac{1}{2} a^5 d^5 (a B d+6 A (b d+a e)) x^2+$$
$$a^4 d^4 \left(2 a B d (b d+a e)+A \left(5 b^2 d^2+12 a b d e+5 a^2 e^2\right)\right) x^3+$$
$$\frac{1}{4} a^3 d^3 \left(3 a B d \left(5 b^2 d^2+12 a b d e+5 a^2 e^2\right)+10 A \left(2 b^3 d^3+9 a b^2 d^2 e+9 a^2 b d e^2+2 a^3 e^3\right)\right) x^4+$$
$$a^2 d^2 \left(2 a B d \left(2 b^3 d^3+9 a b^2 d^2 e+9 a^2 b d e^2+2 a^3 e^3\right)+\right.$$
$$\left.3 A \left(b^4 d^4+8 a b^3 d^3 e+15 a^2 b^2 d^2 e^2+8 a^3 b d e^3+a^4 e^4\right)\right) x^5+$$
$$\frac{1}{2} a d \left(5 a B d \left(b^4 d^4+8 a b^3 d^3 e+15 a^2 b^2 d^2 e^2+8 a^3 b d e^3+a^4 e^4\right)+\right.$$
$$\left.2 A \left(b^5 d^5+15 a b^4 d^4 e+50 a^2 b^3 d^3 e^2+50 a^3 b^2 d^2 e^3+15 a^4 b d e^4+a^5 e^5\right)\right) x^6+$$
$$\frac{1}{7} \left(6 a B d \left(b^5 d^5+15 a b^4 d^4 e+50 a^2 b^3 d^3 e^2+50 a^3 b^2 d^2 e^3+15 a^4 b d e^4+a^5 e^5\right)+\right.$$
$$\left.A \left(b^6 d^6+36 a b^5 d^5 e+225 a^2 b^4 d^4 e^2+400 a^3 b^3 d^3 e^3+225 a^4 b^2 d^2 e^4+36 a^5 b d e^5+a^6 e^6\right)\right) x^7+$$
$$\frac{1}{8} \left(a^6 B e^6+6 a^5 b e^5 (6 B d+A e)+45 a^4 b^2 d e^4 (5 B d+2 A e)+100 a^3 b^3 d^2 e^3 (4 B d+3 A e)+\right.$$
$$\left.75 a^2 b^4 d^3 e^2 (3 B d+4 A e)+18 a b^5 d^4 e (2 B d+5 A e)+b^6 d^5 (B d+6 A e)\right) x^8+$$
$$\frac{1}{3} b e \left(2 a^5 B e^5+5 a^4 b e^4 (6 B d+A e)+20 a^3 b^2 d e^3 (5 B d+2 A e)+\right.$$
$$\left.25 a^2 b^3 d^2 e^2 (4 B d+3 A e)+10 a b^4 d^3 e (3 B d+4 A e)+b^5 d^4 (2 B d+5 A e)\right) x^9+$$
$$\frac{1}{2} b^2 e^2 \left(3 a^4 B e^4+4 a^3 b e^3 (6 B d+A e)+9 a^2 b^2 d e^2 (5 B d+2 A e)+\right.$$
$$\left.6 a b^3 d^2 e (4 B d+3 A e)+b^4 d^3 (3 B d+4 A e)\right) x^{10}+$$
$$\frac{1}{11} b^3 e^3 \left(20 a^3 B e^3+15 a^2 b e^2 (6 B d+A e)+18 a b^2 d e (5 B d+2 A e)+5 b^3 d^2 (4 B d+3 A e)\right) x^{11}+$$
$$\frac{1}{4} b^4 e^4 \left(5 a^2 B e^2+2 a b e (6 B d+A e)+b^2 d (5 B d+2 A e)\right) x^{12}+$$
$$\frac{1}{13} b^5 e^5 (6 b B d+A b e+6 a B e) x^{13}+\frac{1}{14} b^6 B e^6 x^{14}$$

Problem 1042: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^6 (A+B x) (d+e x)^5 \, dx$$

Optimal (type 1, 240 leaves, 2 steps):

$$\frac{(A b-a B) (b d-a e)^5 (a+b x)^7}{7 b^7}+\frac{(b d-a e)^4 (b B d+5 A b e-6 a B e) (a+b x)^8}{8 b^7}+\frac{5 e (b d-a e)^3 (b B d+2 A b e-3 a B e) (a+b x)^9}{9 b^7}+\frac{e^2 (b d-a e)^2 (b B d+A b e-2 a B e) (a+b x)^{10}}{b^7}+\frac{5 e^3 (b d-a e) (2 b B d+A b e-3 a B e) (a+b x)^{11}}{11 b^7}+\frac{e^4 (5 b B d+A b e-6 a B e) (a+b x)^{12}}{12 b^7}+\frac{B e^5 (a+b x)^{13}}{13 b^7}$$

Result (type 1, 907 leaves):

$$a^6 A d^5 x+\frac{1}{2} a^5 d^4 (6 A b d+a B d+5 a A e) x^2+\frac{1}{3} a^4 d^3 \left(a B d (6 b d+5 a e)+5 A \left(3 b^2 d^2+6 a b d e+2 a^2 e^2\right)\right) x^3+\frac{5}{4} a^3 d^2 \left(a B d \left(3 b^2 d^2+6 a b d e+2 a^2 e^2\right)+A \left(4 b^3 d^3+15 a b^2 d^2 e+12 a^2 b d e^2+2 a^3 e^3\right)\right) x^4+a^2 d \left(a B d \left(4 b^3 d^3+15 a b^2 d^2 e+12 a^2 b d e^2+2 a^3 e^3\right)+A \left(3 b^4 d^4+20 a b^3 d^3 e+30 a^2 b^2 d^2 e^2+12 a^3 b d e^3+a^4 e^4\right)\right) x^5+\frac{1}{6} a \left(5 a B d \left(3 b^4 d^4+20 a b^3 d^3 e+30 a^2 b^2 d^2 e^2+12 a^3 b d e^3+a^4 e^4\right)+A \left(6 b^5 d^5+75 a b^4 d^4 e+200 a^2 b^3 d^3 e^2+150 a^3 b^2 d^2 e^3+30 a^4 b d e^4+a^5 e^5\right)\right) x^6+\frac{1}{7} \left(a B \left(6 b^5 d^5+75 a b^4 d^4 e+200 a^2 b^3 d^3 e^2+150 a^3 b^2 d^2 e^3+30 a^4 b d e^4+a^5 e^5\right)+A b \left(b^5 d^5+30 a b^4 d^4 e+150 a^2 b^3 d^3 e^2+200 a^3 b^2 d^2 e^3+75 a^4 b d e^4+6 a^5 e^5\right)\right) x^7+\frac{1}{8} b \left(6 a^5 B e^5+150 a^2 b^3 d^2 e^2 (B d+A e)+100 a^3 b^2 d e^3 (2 B d+A e)+15 a^4 b e^4 (5 B d+A e)+30 a b^4 d^3 e (B d+2 A e)+b^5 d^4 (B d+5 A e)\right) x^8+\frac{5}{9} b^2 e \left(3 a^4 B e^4+12 a b^3 d^2 e (B d+A e)+15 a^2 b^2 d e^2 (2 B d+A e)+4 a^3 b e^3 (5 B d+A e)+b^4 d^3 (B d+2 A e)\right) x^9+\frac{1}{2} b^3 e^2 \left(4 a^3 B e^3+2 b^3 d^2 (B d+A e)+6 a b^2 d e (2 B d+A e)+3 a^2 b e^2 (5 B d+A e)\right) x^{10}+\frac{1}{11} b^4 e^3 \left(15 a^2 B e^2+5 b^2 d (2 B d+A e)+6 a b e (5 B d+A e)\right) x^{11}+\frac{1}{12} b^5 e^4 (5 b B d+A b e+6 a B e) x^{12}+\frac{1}{13} b^6 B e^5 x^{13}$$

Problem 1043: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^6 (A+B x) (d+e x)^4 \, dx$$

Optimal (type 1, 204 leaves, 2 steps):

$$\frac{(A b-a B) (b d-a e)^4 (a+b x)^7}{7 b^6}+\frac{(b d-a e)^3 (b B d+4 A b e-5 a B e) (a+b x)^8}{8 b^6}+\frac{2 e (b d-a e)^2 (2 b B d+3 A b e-5 a B e) (a+b x)^9}{9 b^6}+\frac{e^2 (b d-a e) (3 b B d+2 A b e-5 a B e) (a+b x)^{10}}{5 b^6}+\frac{e^3 (4 b B d+A b e-5 a B e) (a+b x)^{11}}{11 b^6}+\frac{B e^4 (a+b x)^{12}}{12 b^6}$$

Result (type 1, 762 leaves):

$$a^6 A d^4 x+\frac{1}{2} a^5 d^3 (6 A b d+a B d+4 a A e) x^2+\frac{1}{3} a^4 d^2 \left(2 a B d (3 b d+2 a e)+3 A \left(5 b^2 d^2+8 a b d e+2 a^2 e^2\right)\right) x^3+\frac{1}{4} a^3 d \left(3 a B d \left(5 b^2 d^2+8 a b d e+2 a^2 e^2\right)+4 A \left(5 b^3 d^3+15 a b^2 d^2 e+9 a^2 b d e^2+a^3 e^3\right)\right) x^4+\frac{1}{5} a^2 \left(4 a B d \left(5 b^3 d^3+15 a b^2 d^2 e+9 a^2 b d e^2+a^3 e^3\right)+A \left(15 b^4 d^4+80 a b^3 d^3 e+90 a^2 b^2 d^2 e^2+24 a^3 b d e^3+a^4 e^4\right)\right) x^5+\frac{1}{6} a \left(6 A b \left(b^4 d^4+10 a b^3 d^3 e+20 a^2 b^2 d^2 e^2+10 a^3 b d e^3+a^4 e^4\right)+a B \left(15 b^4 d^4+80 a b^3 d^3 e+90 a^2 b^2 d^2 e^2+24 a^3 b d e^3+a^4 e^4\right)\right) x^6+\frac{1}{7} b \left(6 a B \left(b^4 d^4+10 a b^3 d^3 e+20 a^2 b^2 d^2 e^2+10 a^3 b d e^3+a^4 e^4\right)+A b \left(b^4 d^4+24 a b^3 d^3 e+90 a^2 b^2 d^2 e^2+80 a^3 b d e^3+15 a^4 e^4\right)\right) x^7+\frac{1}{8} b^2 \left(15 a^4 B e^4+20 a^3 b e^3 (4 B d+A e)+30 a^2 b^2 d e^2 (3 B d+2 A e)+12 a b^3 d^2 e (2 B d+3 A e)+b^4 d^3 (B d+4 A e)\right) x^8+\frac{1}{9} b^3 e \left(20 a^3 B e^3+15 a^2 b e^2 (4 B d+A e)+12 a b^2 d e (3 B d+2 A e)+2 b^3 d^2 (2 B d+3 A e)\right) x^9+\frac{1}{10} b^4 e^2 \left(15 a^2 B e^2+6 a b e (4 B d+A e)+2 b^2 d (3 B d+2 A e)\right) x^{10}+\frac{1}{11} b^5 e^3 (4 b B d+A b e+6 a B e) x^{11}+\frac{1}{12} b^6 B e^4 x^{12}$$

Problem 1044: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^6 (A+B x) (d+e x)^3 \, dx$$

Optimal (type 1, 159 leaves, 2 steps):

$$\frac{(A b-a B)\,(b d-a e)^3\,(a+b x)^7}{7 b^5}+\frac{(b d-a e)^2\,(b B d+3 A b e-4 a B e)\,(a+b x)^8}{8 b^5}+\frac{e\,(b d-a e)\,(b B d+A b e-2 a B e)\,(a+b x)^9}{3 b^5}+\frac{e^2\,(3 b B d+A b e-4 a B e)\,(a+b x)^{10}}{10 b^5}+\frac{B e^3\,(a+b x)^{11}}{11 b^5}$$

Result (type 1, 586 leaves):

$$a^6 A d^3 x+\frac{1}{2} a^5 d^2\,(6 A b d+a B d+3 a A e)\,x^2+a^4 d\,\left(a B d\,(2 b d+a e)+A\,\left(5 b^2 d^2+6 a b d e+a^2 e^2\right)\right)\,x^3+\frac{1}{4} a^3\,\left(3 a B d\,\left(5 b^2 d^2+6 a b d e+a^2 e^2\right)+A\,\left(20 b^3 d^3+45 a b^2 d^2 e+18 a^2 b d e^2+a^3 e^3\right)\right)\,x^4+\frac{1}{5} a^2\,\left(a B\,\left(20 b^3 d^3+45 a b^2 d^2 e+18 a^2 b d e^2+a^3 e^3\right)+3 A b\,\left(5 b^3 d^3+20 a b^2 d^2 e+15 a^2 b d e^2+2 a^3 e^3\right)\right)\,x^5+\frac{1}{2} a b\,\left(a B\,\left(5 b^3 d^3+20 a b^2 d^2 e+15 a^2 b d e^2+2 a^3 e^3\right)+A b\,\left(2 b^3 d^3+15 a b^2 d^2 e+20 a^2 b d e^2+5 a^3 e^3\right)\right)\,x^6+\frac{1}{7} b^2\,\left(3 a B\,\left(2 b^3 d^3+15 a b^2 d^2 e+20 a^2 b d e^2+5 a^3 e^3\right)+A b\,\left(b^3 d^3+18 a b^2 d^2 e+45 a^2 b d e^2+20 a^3 e^3\right)\right)\,x^7+\frac{1}{8} b^3\,\left(20 a^3 B e^3+18 a b^2 d e\,(B d+A e)+15 a^2 b e^2\,(3 B d+A e)+b^3 d^2\,(B d+3 A e)\right)\,x^8+\frac{1}{3} b^4 e\,\left(5 a^2 B e^2+b^2 d\,(B d+A e)+2 a b e\,(3 B d+A e)\right)\,x^9+\frac{1}{10} b^5 e^2\,(3 b B d+A b e+6 a B e)\,x^{10}+\frac{1}{11} b^6 B e^3 x^{11}$$

Problem 1045: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^6\,(A+B x)\,(d+e x)^2\,dx$$

Optimal (type 1, 118 leaves, 2 steps):

$$\frac{(A b-a B)\,(b d-a e)^2\,(a+b x)^7}{7 b^4}+\frac{(b d-a e)\,(b B d+2 A b e-3 a B e)\,(a+b x)^8}{8 b^4}+\frac{e\,(2 b B d+A b e-3 a B e)\,(a+b x)^9}{9 b^4}+\frac{B e^2\,(a+b x)^{10}}{10 b^4}$$

Result (type 1, 386 leaves):

$$\frac{1}{2520} x\,\Big(210 a^6\,\left(4 A\,\left(3 d^2+3 d e x+e^2 x^2\right)+B x\,\left(6 d^2+8 d e x+3 e^2 x^2\right)\right)+252 a^5 b x\,\left(5 A\,\left(6 d^2+8 d e x+3 e^2 x^2\right)+2 B x\,\left(10 d^2+15 d e x+6 e^2 x^2\right)\right)+630 a^4 b^2 x^2\,\left(2 A\,\left(10 d^2+15 d e x+6 e^2 x^2\right)+B x\,\left(15 d^2+24 d e x+10 e^2 x^2\right)\right)+120 a^3 b^3 x^3\,\left(7 A\,\left(15 d^2+24 d e x+10 e^2 x^2\right)+4 B x\,\left(21 d^2+35 d e x+15 e^2 x^2\right)\right)+45 a^2 b^4 x^4\,\left(8 A\,\left(21 d^2+35 d e x+15 e^2 x^2\right)+5 B x\,\left(28 d^2+48 d e x+21 e^2 x^2\right)\right)+30 a b^5 x^5\,\left(3 A\,\left(28 d^2+48 d e x+21 e^2 x^2\right)+2 B x\,\left(36 d^2+63 d e x+28 e^2 x^2\right)\right)+b^6 x^6\,\left(10 A\,\left(36 d^2+63 d e x+28 e^2 x^2\right)+7 B x\,\left(45 d^2+80 d e x+36 e^2 x^2\right)\right)\Big)$$

Problem 1046: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^6 (A+B x) (d+e x) \, dx$$

Optimal (type 1, 75 leaves, 2 steps):

$$\frac{(A b-a B) (b d-a e) (a+b x)^7}{7 b^3}+\frac{(b B d+A b e-2 a B e) (a+b x)^8}{8 b^3}+\frac{B e (a+b x)^9}{9 b^3}$$

Result (type 1, 231 leaves):

$$\frac{1}{504} x \left(84 a^6 (3 A (2 d+e x)+B x (3 d+2 e x))+126 a^4 b^2 x^2 (5 A (4 d+3 e x)+3 B x (5 d+4 e x))+252 a^5 b x (B x (4 d+3 e x)+A (6 d+4 e x))+168 a^3 b^3 x^3 (3 A (5 d+4 e x)+2 B x (6 d+5 e x))+36 a^2 b^4 x^4 (7 A (6 d+5 e x)+5 B x (7 d+6 e x))+18 a b^5 x^5 (4 A (7 d+6 e x)+3 B x (8 d+7 e x))+b^6 x^6 (9 A (8 d+7 e x)+7 B x (9 d+8 e x))\right)$$

Problem 1047: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^6 (A+B x) \, dx$$

Optimal (type 1, 38 leaves, 2 steps):

$$\frac{(A b-a B) (a+b x)^7}{7 b^2}+\frac{B (a+b x)^8}{8 b^2}$$

Result (type 1, 122 leaves):

$$\frac{1}{56} x \left(28 a^6 (2 A+B x)+56 a^5 b x (3 A+2 B x)+70 a^4 b^2 x^2 (4 A+3 B x)+56 a^3 b^3 x^3 (5 A+4 B x)+28 a^2 b^4 x^4 (6 A+5 B x)+8 a b^5 x^5 (7 A+6 B x)+b^6 x^6 (8 A+7 B x)\right)$$

Problem 1048: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^6 (A+B x)}{d+e x} \, dx$$

Optimal (type 3, 220 leaves, 2 steps):

$$\frac{b (b d-a e)^5 (B d-A e) x}{e^7}-\frac{(b d-a e)^4 (B d-A e) (a+b x)^2}{2 e^6}+\frac{(b d-a e)^3 (B d-A e) (a+b x)^3}{3 e^5}-\frac{(b d-a e)^2 (B d-A e) (a+b x)^4}{4 e^4}+\frac{(b d-a e) (B d-A e) (a+b x)^5}{5 e^3}-\frac{(B d-A e) (a+b x)^6}{6 e^2}+\frac{B (a+b x)^7}{7 b e}-\frac{(b d-a e)^6 (B d-A e) \text{Log}[d+e x]}{e^8}$$

Result (type 3, 501 leaves):

$$\frac{1}{420\,e^8}\Big(e\,x\,\big(420\,a^6\,B\,e^6+1260\,a^5\,b\,e^5\,(-2\,B\,d+2\,A\,e+B\,e\,x)+1050\,a^4\,b^2\,e^4\,\big(3\,A\,e\,(-2\,d+e\,x)+B\,(6\,d^2-3\,d\,e\,x+2\,e^2\,x^2)\big)+700\,a^3\,b^3\,e^3\,\big(2\,A\,e\,(6\,d^2-3\,d\,e\,x+2\,e^2\,x^2)+B\,(-12\,d^3+6\,d^2\,e\,x-4\,d\,e^2\,x^2+3\,e^3\,x^3)\big)+105\,a^2\,b^4\,e^2\,\big(5\,A\,e\,(-12\,d^3+6\,d^2\,e\,x-4\,d\,e^2\,x^2+3\,e^3\,x^3)+B\,(60\,d^4-30\,d^3\,e\,x+20\,d^2\,e^2\,x^2-15\,d\,e^3\,x^3+12\,e^4\,x^4)\big)+42\,a\,b^5\,e\,\big(A\,e\,(60\,d^4-30\,d^3\,e\,x+20\,d^2\,e^2\,x^2-15\,d\,e^3\,x^3+12\,e^4\,x^4)+B\,(-60\,d^5+30\,d^4\,e\,x-20\,d^3\,e^2\,x^2+15\,d^2\,e^3\,x^3-12\,d\,e^4\,x^4+10\,e^5\,x^5)\big)+b^6\,\big(7\,A\,e\,(-60\,d^5+30\,d^4\,e\,x-20\,d^3\,e^2\,x^2+15\,d^2\,e^3\,x^3-12\,d\,e^4\,x^4+10\,e^5\,x^5)+B\,(420\,d^6-210\,d^5\,e\,x+140\,d^4\,e^2\,x^2-105\,d^3\,e^3\,x^3+84\,d^2\,e^4\,x^4-70\,d\,e^5\,x^5+60\,e^6\,x^6)\big)\big)-420\,(b\,d-a\,e)^6\,(B\,d-A\,e)\,\mathrm{Log}[d+e\,x]\Big)$$

Problem 1049: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b\,x)^6\,(A+B\,x)}{(d+e\,x)^2}\,dx$$

Optimal (type 3, 277 leaves, 2 steps):

$$-\frac{3\,b\,(b\,d-a\,e)^4\,(7\,b\,B\,d-5\,A\,b\,e-2\,a\,B\,e)\,x}{e^7}+\frac{(b\,d-a\,e)^6\,(B\,d-A\,e)}{e^8\,(d+e\,x)}+\frac{5\,b^2\,(b\,d-a\,e)^3\,(7\,b\,B\,d-4\,A\,b\,e-3\,a\,B\,e)\,(d+e\,x)^2}{2\,e^8}-\frac{5\,b^3\,(b\,d-a\,e)^2\,(7\,b\,B\,d-3\,A\,b\,e-4\,a\,B\,e)\,(d+e\,x)^3}{3\,e^8}+\frac{3\,b^4\,(b\,d-a\,e)\,(7\,b\,B\,d-2\,A\,b\,e-5\,a\,B\,e)\,(d+e\,x)^4}{4\,e^8}-\frac{b^5\,(7\,b\,B\,d-A\,b\,e-6\,a\,B\,e)\,(d+e\,x)^5}{5\,e^8}+\frac{b^6\,B\,(d+e\,x)^6}{6\,e^8}+\frac{(b\,d-a\,e)^5\,(7\,b\,B\,d-6\,A\,b\,e-a\,B\,e)\,\mathrm{Log}[d+e\,x]}{e^8}$$

Result (type 3, 643 leaves):

$$\frac{1}{60\,e^8\,(d+e\,x)}\Big(60\,a^6\,e^6\,(B\,d-A\,e)+360\,a^5\,b\,e^5\,\big(A\,d\,e+B\,(-d^2+d\,e\,x+e^2\,x^2)\big)+450\,a^4\,b^2\,e^4\,\big(2\,A\,e\,(-d^2+d\,e\,x+e^2\,x^2)+B\,(2\,d^3-4\,d^2\,e\,x-3\,d\,e^2\,x^2+e^3\,x^3)\big)+200\,a^3\,b^3\,e^3\,\big(3\,A\,e\,(2\,d^3-4\,d^2\,e\,x-3\,d\,e^2\,x^2+e^3\,x^3)+2\,B\,(-3\,d^4+9\,d^3\,e\,x+6\,d^2\,e^2\,x^2-2\,d\,e^3\,x^3+e^4\,x^4)\big)+75\,a^2\,b^4\,e^2\,\big(4\,A\,e\,(-3\,d^4+9\,d^3\,e\,x+6\,d^2\,e^2\,x^2-2\,d\,e^3\,x^3+e^4\,x^4)+B\,(12\,d^5-48\,d^4\,e\,x-30\,d^3\,e^2\,x^2+10\,d^2\,e^3\,x^3-5\,d\,e^4\,x^4+3\,e^5\,x^5)\big)+6\,a\,b^5\,e\,\big(5\,A\,e\,(12\,d^5-48\,d^4\,e\,x-30\,d^3\,e^2\,x^2+10\,d^2\,e^3\,x^3-5\,d\,e^4\,x^4+3\,e^5\,x^5)-6\,B\,(10\,d^6-50\,d^5\,e\,x-30\,d^4\,e^2\,x^2+10\,d^3\,e^3\,x^3-5\,d^2\,e^4\,x^4+3\,d\,e^5\,x^5-2\,e^6\,x^6)\big)+b^6\,\big(6\,A\,e\,(-10\,d^6+50\,d^5\,e\,x+30\,d^4\,e^2\,x^2-10\,d^3\,e^3\,x^3+5\,d^2\,e^4\,x^4-3\,d\,e^5\,x^5+2\,e^6\,x^6)+B\,(60\,d^7-360\,d^6\,e\,x-210\,d^5\,e^2\,x^2+70\,d^4\,e^3\,x^3-35\,d^3\,e^4\,x^4+21\,d^2\,e^5\,x^5-14\,d\,e^6\,x^6+10\,e^7\,x^7)\big)+60\,(b\,d-a\,e)^5\,(7\,b\,B\,d-6\,A\,b\,e-a\,B\,e)\,(d+e\,x)\,\mathrm{Log}[d+e\,x]\Big)$$

Problem 1053: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^6 (A+B x)}{(d+e x)^6} \, dx$$

Optimal (type 3, 272 leaves, 2 steps):

$$-\frac{b^5 (6 b B d-A b e-6 a B e) x}{e^7}+\frac{b^6 B x^2}{2 e^6}+\frac{(b d-a e)^6 (B d-A e)}{5 e^8 (d+e x)^5}-\frac{(b d-a e)^5 (7 b B d-6 A b e-a B e)}{4 e^8 (d+e x)^4}+\frac{b (b d-a e)^4 (7 b B d-5 A b e-2 a B e)}{e^8 (d+e x)^3}-\frac{5 b^2 (b d-a e)^3 (7 b B d-4 A b e-3 a B e)}{2 e^8 (d+e x)^2}+\frac{5 b^3 (b d-a e)^2 (7 b B d-3 A b e-4 a B e)}{e^8 (d+e x)}+\frac{3 b^4 (b d-a e) (7 b B d-2 A b e-5 a B e) \text{Log}[d+e x]}{e^8}$$

Result (type 3, 633 leaves):

$$\frac{1}{20 e^8 (d+e x)^5}\Big(-a^6 e^6 (4 A e+B (d+5 e x))-2 a^5 b e^5 \left(3 A e (d+5 e x)+2 B \left(d^2+5 d e x+10 e^2 x^2\right)\right)-5 a^4 b^2 e^4 \left(2 A e \left(d^2+5 d e x+10 e^2 x^2\right)+3 B \left(d^3+5 d^2 e x+10 d e^2 x^2+10 e^3 x^3\right)\right)-20 a^3 b^3 e^3 \left(A e \left(d^3+5 d^2 e x+10 d e^2 x^2+10 e^3 x^3\right)+4 B \left(d^4+5 d^3 e x+10 d^2 e^2 x^2+10 d e^3 x^3+5 e^4 x^4\right)\right)+5 a^2 b^4 e^2 \left(-12 A e \left(d^4+5 d^3 e x+10 d^2 e^2 x^2+10 d e^3 x^3+5 e^4 x^4\right)+B d \left(137 d^4+625 d^3 e x+1100 d^2 e^2 x^2+900 d e^3 x^3+300 e^4 x^4\right)\right)+2 a b^5 e \left(A d e \left(137 d^4+625 d^3 e x+1100 d^2 e^2 x^2+900 d e^3 x^3+300 e^4 x^4\right)-6 B \left(87 d^6+375 d^5 e x+600 d^4 e^2 x^2+400 d^3 e^3 x^3+50 d^2 e^4 x^4-50 d e^5 x^5-10 e^6 x^6\right)\right)+b^6 \left(-2 A e \left(87 d^6+375 d^5 e x+600 d^4 e^2 x^2+400 d^3 e^3 x^3+50 d^2 e^4 x^4-50 d e^5 x^5-10 e^6 x^6\right)+B \left(459 d^7+1875 d^6 e x+2700 d^5 e^2 x^2+1300 d^4 e^3 x^3-400 d^3 e^4 x^4-500 d^2 e^5 x^5-70 d e^6 x^6+10 e^7 x^7\right)\right)+60 b^4 (b d-a e) (7 b B d-2 A b e-5 a B e) (d+e x)^5 \text{Log}[d+e x]\Big)$$

Problem 1054: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^6 (A+B x)}{(d+e x)^7} \, dx$$

Optimal (type 3, 278 leaves, 2 steps):

$$\frac{b^6 B x}{e^7}+\frac{(b d-a e)^6 (B d-A e)}{6 e^8 (d+e x)^6}-\frac{(b d-a e)^5 (7 b B d-6 A b e-a B e)}{5 e^8 (d+e x)^5}+\frac{3 b (b d-a e)^4 (7 b B d-5 A b e-2 a B e)}{4 e^8 (d+e x)^4}-\frac{5 b^2 (b d-a e)^3 (7 b B d-4 A b e-3 a B e)}{3 e^8 (d+e x)^3}+\frac{5 b^3 (b d-a e)^2 (7 b B d-3 A b e-4 a B e)}{2 e^8 (d+e x)^2}-\frac{3 b^4 (b d-a e) (7 b B d-2 A b e-5 a B e)}{e^8 (d+e x)}-\frac{b^5 (7 b B d-A b e-6 a B e) \operatorname{Log}[d+e x]}{e^8}$$

Result (type 3, 619 leaves):

$$-\frac{1}{60 e^8 (d+e x)^6}\Big(2 a^6 e^6 (5 A e+B (d+6 e x))+6 a^5 b e^5 (2 A e (d+6 e x)+B (d^2+6 d e x+15 e^2 x^2))+15 a^4 b^2 e^4 (A e (d^2+6 d e x+15 e^2 x^2)+B (d^3+6 d^2 e x+15 d e^2 x^2+20 e^3 x^3))+20 a^3 b^3 e^3 (A e (d^3+6 d^2 e x+15 d e^2 x^2+20 e^3 x^3)+2 B (d^4+6 d^3 e x+15 d^2 e^2 x^2+20 d e^3 x^3+15 e^4 x^4))+30 a^2 b^4 e^2 (A e (d^4+6 d^3 e x+15 d^2 e^2 x^2+20 d e^3 x^3+15 e^4 x^4)+5 B (d^5+6 d^4 e x+15 d^3 e^2 x^2+20 d^2 e^3 x^3+15 d e^4 x^4+6 e^5 x^5))-6 a b^5 e (-10 A e (d^5+6 d^4 e x+15 d^3 e^2 x^2+20 d^2 e^3 x^3+15 d e^4 x^4+6 e^5 x^5)+B d (147 d^5+822 d^4 e x+1875 d^3 e^2 x^2+2200 d^2 e^3 x^3+1350 d e^4 x^4+360 e^5 x^5))-b^6 (A d e (147 d^5+822 d^4 e x+1875 d^3 e^2 x^2+2200 d^2 e^3 x^3+1350 d e^4 x^4+360 e^5 x^5)-B (669 d^7+3594 d^6 e x+7725 d^5 e^2 x^2+8200 d^4 e^3 x^3+4050 d^3 e^4 x^4+360 d^2 e^5 x^5-360 d e^6 x^6-60 e^7 x^7))+60 b^5 (7 b B d-A b e-6 a B e) (d+e x)^6 \operatorname{Log}[d+e x]\Big)$$

Problem 1055: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^6 (A+B x)}{(d+e x)^8} \, dx$$

Optimal (type 3, 213 leaves, 3 steps):

$$-\frac{(B d-A e) (a+b x)^7}{7 e (b d-a e) (d+e x)^7}-\frac{B (b d-a e)^6}{6 e^8 (d+e x)^6}+\frac{6 b B (b d-a e)^5}{5 e^8 (d+e x)^5}-\frac{15 b^2 B (b d-a e)^4}{4 e^8 (d+e x)^4}+\frac{20 b^3 B (b d-a e)^3}{3 e^8 (d+e x)^3}-\frac{15 b^4 B (b d-a e)^2}{2 e^8 (d+e x)^2}+\frac{6 b^5 B (b d-a e)}{e^8 (d+e x)}+\frac{b^6 B \operatorname{Log}[d+e x]}{e^8}$$

Result (type 3, 615 leaves):

$$-\frac{1}{420 e^8 (d+e x)^7}\Big(10 a^6 e^6 (6 A e+B (d+7 e x))+12 a^5 b e^5 (5 A e (d+7 e x)+2 B (d^2+7 d e x+21 e^2 x^2))+15 a^4 b^2 e^4 (4 A e (d^2+7 d e x+21 e^2 x^2)+3 B (d^3+7 d^2 e x+21 d e^2 x^2+35 e^3 x^3))+20 a^3 b^3 e^3 (3 A e (d^3+7 d^2 e x+21 d e^2 x^2+35 e^3 x^3)+4 B (d^4+7 d^3 e x+21 d^2 e^2 x^2+35 d e^3 x^3+35 e^4 x^4))+30 a^2 b^4 e^2 (2 A e (d^4+7 d^3 e x+21 d^2 e^2 x^2+35 d e^3 x^3+35 e^4 x^4)+5 B (d^5+7 d^4 e x+21 d^3 e^2 x^2+35 d^2 e^3 x^3+35 d e^4 x^4+21 e^5 x^5))+60 a b^5 e (A e (d^5+7 d^4 e x+21 d^3 e^2 x^2+35 d^2 e^3 x^3+35 d e^4 x^4+21 e^5 x^5)+6 B (d^6+7 d^5 e x+21 d^4 e^2 x^2+35 d^3 e^3 x^3+35 d^2 e^4 x^4+21 d e^5 x^5+7 e^6 x^6))+b^6 (60 A e (d^6+7 d^5 e x+21 d^4 e^2 x^2+35 d^3 e^3 x^3+35 d^2 e^4 x^4+21 d e^5 x^5+7 e^6 x^6)-B d (1089 d^6+7203 d^5 e x+20139 d^4 e^2 x^2+30625 d^3 e^3 x^3+26950 d^2 e^4 x^4+13230 d e^5 x^5+2940 e^6 x^6))-420 b^6 B (d+e x)^7 \text{Log}[d+e x]\Big)$$

Problem 1056: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^6 (A+B x)}{(d+e x)^9} \, dx$$

Optimal (type 1, 86 leaves, 2 steps):

$$-\frac{(B d-A e) (a+b x)^7}{8 e (b d-a e) (d+e x)^8}+\frac{(7 b B d+A b e-8 a B e) (a+b x)^7}{56 e (b d-a e)^2 (d+e x)^7}$$

Result (type 1, 597 leaves):

$$-\frac{1}{56 e^8 (d+e x)^8}\Big(a^6 e^6 (7 A e+B (d+8 e x))+2 a^5 b e^5 (3 A e (d+8 e x)+B (d^2+8 d e x+28 e^2 x^2))+a^4 b^2 e^4 (5 A e (d^2+8 d e x+28 e^2 x^2)+3 B (d^3+8 d^2 e x+28 d e^2 x^2+56 e^3 x^3))+4 a^3 b^3 e^3 (A e (d^3+8 d^2 e x+28 d e^2 x^2+56 e^3 x^3)+B (d^4+8 d^3 e x+28 d^2 e^2 x^2+56 d e^3 x^3+70 e^4 x^4))+a^2 b^4 e^2 (3 A e (d^4+8 d^3 e x+28 d^2 e^2 x^2+56 d e^3 x^3+70 e^4 x^4)+5 B (d^5+8 d^4 e x+28 d^3 e^2 x^2+56 d^2 e^3 x^3+70 d e^4 x^4+56 e^5 x^5))+2 a b^5 e (A e (d^5+8 d^4 e x+28 d^3 e^2 x^2+56 d^2 e^3 x^3+70 d e^4 x^4+56 e^5 x^5)+3 B (d^6+8 d^5 e x+28 d^4 e^2 x^2+56 d^3 e^3 x^3+70 d^2 e^4 x^4+56 d e^5 x^5+28 e^6 x^6))+b^6 (A e (d^6+8 d^5 e x+28 d^4 e^2 x^2+56 d^3 e^3 x^3+70 d^2 e^4 x^4+56 d e^5 x^5+28 e^6 x^6)+7 B (d^7+8 d^6 e x+28 d^5 e^2 x^2+56 d^4 e^3 x^3+70 d^3 e^4 x^4+56 d^2 e^5 x^5+28 d e^6 x^6+8 e^7 x^7))\Big)$$

Problem 1057: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^6 (A+B x)}{(d+e x)^{10}} \, dx$$

Optimal (type 1, 135 leaves, 3 steps):

$$-\frac{(B d-A e)\ (a+b x)^7}{9 e\ (b d-a e)\ (d+e x)^9}+\frac{(7 b B d+2 A b e-9 a B e)\ (a+b x)^7}{72 e\ (b d-a e)^2\ (d+e x)^8}+\frac{b\ (7 b B d+2 A b e-9 a B e)\ (a+b x)^7}{504 e\ (b d-a e)^3\ (d+e x)^7}$$

Result (type 1, 603 leaves):

$$-\frac{1}{504 e^8\ (d+e x)^9}\Big(7 a^6 e^6\ (8 A e+B\ (d+9 e x))+6 a^5 b e^5\ (7 A e\ (d+9 e x)+2 B\ (d^2+9 d e x+36 e^2 x^2))+15 a^4 b^2 e^4\ (2 A e\ (d^2+9 d e x+36 e^2 x^2)+B\ (d^3+9 d^2 e x+36 d e^2 x^2+84 e^3 x^3))+4 a^3 b^3 e^3\ (5 A e\ (d^3+9 d^2 e x+36 d e^2 x^2+84 e^3 x^3)+4 B\ (d^4+9 d^3 e x+36 d^2 e^2 x^2+84 d e^3 x^3+126 e^4 x^4))+3 a^2 b^4 e^2\ (4 A e\ (d^4+9 d^3 e x+36 d^2 e^2 x^2+84 d e^3 x^3+126 e^4 x^4)+5 B\ (d^5+9 d^4 e x+36 d^3 e^2 x^2+84 d^2 e^3 x^3+126 d e^4 x^4+126 e^5 x^5))+6 a b^5 e\ (A e\ (d^5+9 d^4 e x+36 d^3 e^2 x^2+84 d^2 e^3 x^3+126 d e^4 x^4+126 e^5 x^5)+2 B\ (d^6+9 d^5 e x+36 d^4 e^2 x^2+84 d^3 e^3 x^3+126 d^2 e^4 x^4+126 d e^5 x^5+84 e^6 x^6))+b^6\ (2 A e\ (d^6+9 d^5 e x+36 d^4 e^2 x^2+84 d^3 e^3 x^3+126 d^2 e^4 x^4+126 d e^5 x^5+84 e^6 x^6)+7 B\ (d^7+9 d^6 e x+36 d^5 e^2 x^2+84 d^4 e^3 x^3+126 d^3 e^4 x^4+126 d^2 e^5 x^5+84 d e^6 x^6+36 e^7 x^7))\Big)$$

Problem 1058: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^6\ (A+B x)}{(d+e x)^{11}}\, dx$$

Optimal (type 1, 185 leaves, 4 steps):

$$-\frac{(B d-A e)\ (a+b x)^7}{10 e\ (b d-a e)\ (d+e x)^{10}}+\frac{(7 b B d+3 A b e-10 a B e)\ (a+b x)^7}{90 e\ (b d-a e)^2\ (d+e x)^9}+\frac{b\ (7 b B d+3 A b e-10 a B e)\ (a+b x)^7}{360 e\ (b d-a e)^3\ (d+e x)^8}+\frac{b^2\ (7 b B d+3 A b e-10 a B e)\ (a+b x)^7}{2520 e\ (b d-a e)^4\ (d+e x)^7}$$

Result (type 1, 602 leaves):

$$-\frac{1}{2520 e^8\ (d+e x)^{10}}\Big(28 a^6 e^6\ (9 A e+B\ (d+10 e x))+42 a^5 b e^5\ (4 A e\ (d+10 e x)+B\ (d^2+10 d e x+45 e^2 x^2))+15 a^4 b^2 e^4\ (7 A e\ (d^2+10 d e x+45 e^2 x^2)+3 B\ (d^3+10 d^2 e x+45 d e^2 x^2+120 e^3 x^3))+20 a^3 b^3 e^3\ (3 A e\ (d^3+10 d^2 e x+45 d e^2 x^2+120 e^3 x^3)+2 B\ (d^4+10 d^3 e x+45 d^2 e^2 x^2+120 d e^3 x^3+210 e^4 x^4))+30 a^2 b^4 e^2\ (A e\ (d^4+10 d^3 e x+45 d^2 e^2 x^2+120 d e^3 x^3+210 e^4 x^4)+B\ (d^5+10 d^4 e x+45 d^3 e^2 x^2+120 d^2 e^3 x^3+210 d e^4 x^4+252 e^5 x^5))+6 a b^5 e\ (2 A e\ (d^5+10 d^4 e x+45 d^3 e^2 x^2+120 d^2 e^3 x^3+210 d e^4 x^4+252 e^5 x^5)+3 B\ (d^6+10 d^5 e x+45 d^4 e^2 x^2+120 d^3 e^3 x^3+210 d^2 e^4 x^4+252 d e^5 x^5+210 e^6 x^6))+b^6\ (3 A e\ (d^6+10 d^5 e x+45 d^4 e^2 x^2+120 d^3 e^3 x^3+210 d^2 e^4 x^4+252 d e^5 x^5+210 e^6 x^6)+7 B\ (d^7+10 d^6 e x+45 d^5 e^2 x^2+120 d^4 e^3 x^3+210 d^3 e^4 x^4+252 d^2 e^5 x^5+210 d e^6 x^6+120 e^7 x^7))\Big)$$

Problem 1059: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^6 (A+B x)}{(d+e x)^{12}} \, dx$$

Optimal (type 1, 235 leaves, 5 steps):

$$-\frac{(B d-A e) (a+b x)^7}{11 e (b d-a e) (d+e x)^{11}}+\frac{(7 b B d+4 A b e-11 a B e) (a+b x)^7}{110 e (b d-a e)^2 (d+e x)^{10}}+\frac{b (7 b B d+4 A b e-11 a B e) (a+b x)^7}{330 e (b d-a e)^3 (d+e x)^9}+\frac{b^2 (7 b B d+4 A b e-11 a B e) (a+b x)^7}{1320 e (b d-a e)^4 (d+e x)^8}+\frac{b^3 (7 b B d+4 A b e-11 a B e) (a+b x)^7}{9240 e (b d-a e)^5 (d+e x)^7}$$

Result (type 1, 605 leaves):

$$-\frac{1}{9240 e^8 (d+e x)^{11}} \Big(84 a^6 e^6 (10 A e+B (d+11 e x))+56 a^5 b e^5 \left(9 A e (d+11 e x)+2 B \left(d^2+11 d e x+55 e^2 x^2\right)\right)+35 a^4 b^2 e^4 \left(8 A e \left(d^2+11 d e x+55 e^2 x^2\right)+3 B \left(d^3+11 d^2 e x+55 d e^2 x^2+165 e^3 x^3\right)\right)+20 a^3 b^3 e^3 \left(7 A e \left(d^3+11 d^2 e x+55 d e^2 x^2+165 e^3 x^3\right)+4 B \left(d^4+11 d^3 e x+55 d^2 e^2 x^2+165 d e^3 x^3+330 e^4 x^4\right)\right)+10 a^2 b^4 e^2 \left(6 A e \left(d^4+11 d^3 e x+55 d^2 e^2 x^2+165 d e^3 x^3+330 e^4 x^4\right)+5 B \left(d^5+11 d^4 e x+55 d^3 e^2 x^2+165 d^2 e^3 x^3+330 d e^4 x^4+462 e^5 x^5\right)\right)+4 a b^5 e \left(5 A e \left(d^5+11 d^4 e x+55 d^3 e^2 x^2+165 d^2 e^3 x^3+330 d e^4 x^4+462 e^5 x^5\right)+6 B \left(d^6+11 d^5 e x+55 d^4 e^2 x^2+165 d^3 e^3 x^3+330 d^2 e^4 x^4+462 d e^5 x^5+462 e^6 x^6\right)\right)+b^6 \left(4 A e \left(d^6+11 d^5 e x+55 d^4 e^2 x^2+165 d^3 e^3 x^3+330 d^2 e^4 x^4+462 d e^5 x^5+462 e^6 x^6\right)+7 B \left(d^7+11 d^6 e x+55 d^5 e^2 x^2+165 d^4 e^3 x^3+330 d^3 e^4 x^4+462 d^2 e^5 x^5+462 d e^6 x^6+330 e^7 x^7\right)\right)\Big)$$

Problem 1060: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^6 (A+B x)}{(d+e x)^{13}} \, dx$$

Optimal (type 1, 292 leaves, 2 steps):

$$\frac{(b d-a e)^6 (B d-A e)}{12 e^8 (d+e x)^{12}}-\frac{(b d-a e)^5 (7 b B d-6 A b e-a B e)}{11 e^8 (d+e x)^{11}}+\frac{3 b (b d-a e)^4 (7 b B d-5 A b e-2 a B e)}{10 e^8 (d+e x)^{10}}-\frac{5 b^2 (b d-a e)^3 (7 b B d-4 A b e-3 a B e)}{9 e^8 (d+e x)^9}+\frac{5 b^3 (b d-a e)^2 (7 b B d-3 A b e-4 a B e)}{8 e^8 (d+e x)^8}-\frac{3 b^4 (b d-a e) (7 b B d-2 A b e-5 a B e)}{7 e^8 (d+e x)^7}+\frac{b^5 (7 b B d-A b e-6 a B e)}{6 e^8 (d+e x)^6}-\frac{b^6 B}{5 e^8 (d+e x)^5}$$

Result (type 1, 600 leaves):

$$-\frac{1}{27720 e^8 (d+e x)^{12}}\Big(210 a^6 e^6 (11 A e+B (d+12 e x))+252 a^5 b e^5 \left(5 A e (d+12 e x)+B \left(d^2+12 d e x+66 e^2 x^2\right)\right)+210 a^4 b^2 e^4 \left(3 A e \left(d^2+12 d e x+66 e^2 x^2\right)+B \left(d^3+12 d^2 e x+66 d e^2 x^2+220 e^3 x^3\right)\right)+140 a^3 b^3 e^3 \left(2 A e \left(d^3+12 d^2 e x+66 d e^2 x^2+220 e^3 x^3\right)+B \left(d^4+12 d^3 e x+66 d^2 e^2 x^2+220 d e^3 x^3+495 e^4 x^4\right)\right)+15 a^2 b^4 e^2 \left(7 A e \left(d^4+12 d^3 e x+66 d^2 e^2 x^2+220 d e^3 x^3+495 e^4 x^4\right)+5 B \left(d^5+12 d^4 e x+66 d^3 e^2 x^2+220 d^2 e^3 x^3+495 d e^4 x^4+792 e^5 x^5\right)\right)+30 a b^5 e \left(A e \left(d^5+12 d^4 e x+66 d^3 e^2 x^2+220 d^2 e^3 x^3+495 d e^4 x^4+792 e^5 x^5\right)+B \left(d^6+12 d^5 e x+66 d^4 e^2 x^2+220 d^3 e^3 x^3+495 d^2 e^4 x^4+792 d e^5 x^5+924 e^6 x^6\right)\right)+b^6 \left(5 A e \left(d^6+12 d^5 e x+66 d^4 e^2 x^2+220 d^3 e^3 x^3+495 d^2 e^4 x^4+792 d e^5 x^5+924 e^6 x^6\right)+7 B \left(d^7+12 d^6 e x+66 d^5 e^2 x^2+220 d^4 e^3 x^3+495 d^3 e^4 x^4+792 d^2 e^5 x^5+924 d e^6 x^6+792 e^7 x^7\right)\right)\Big)$$

Problem 1061: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^6 (A+B x)}{(d+e x)^{14}} \, dx$$

Optimal (type 1, 292 leaves, 2 steps):

$$\frac{(b d-a e)^6 (B d-A e)}{13 e^8 (d+e x)^{13}}-\frac{(b d-a e)^5 (7 b B d-6 A b e-a B e)}{12 e^8 (d+e x)^{12}}+\frac{3 b (b d-a e)^4 (7 b B d-5 A b e-2 a B e)}{11 e^8 (d+e x)^{11}}-\frac{b^2 (b d-a e)^3 (7 b B d-4 A b e-3 a B e)}{2 e^8 (d+e x)^{10}}+\frac{5 b^3 (b d-a e)^2 (7 b B d-3 A b e-4 a B e)}{9 e^8 (d+e x)^9}-\frac{3 b^4 (b d-a e) (7 b B d-2 A b e-5 a B e)}{8 e^8 (d+e x)^8}+\frac{b^5 (7 b B d-A b e-6 a B e)}{7 e^8 (d+e x)^7}-\frac{b^6 B}{6 e^8 (d+e x)^6}$$

Result (type 1, 605 leaves):

$$-\frac{1}{72072\, e^8\, (d+e\, x)^{13}}\Big(462\, a^6\, e^6\, (12\, A\, e+B\, (d+13\, e\, x))+252\, a^5\, b\, e^5\, \big(11\, A\, e\, (d+13\, e\, x)+2\, B\, (d^2+13\, d\, e\, x+78\, e^2\, x^2)\big)+$$
$$126\, a^4\, b^2\, e^4\, \big(10\, A\, e\, (d^2+13\, d\, e\, x+78\, e^2\, x^2)+3\, B\, (d^3+13\, d^2\, e\, x+78\, d\, e^2\, x^2+286\, e^3\, x^3)\big)+$$
$$56\, a^3\, b^3\, e^3\, \big(9\, A\, e\, (d^3+13\, d^2\, e\, x+78\, d\, e^2\, x^2+286\, e^3\, x^3)+$$
$$4\, B\, (d^4+13\, d^3\, e\, x+78\, d^2\, e^2\, x^2+286\, d\, e^3\, x^3+715\, e^4\, x^4)\big)+$$
$$21\, a^2\, b^4\, e^2\, \big(8\, A\, e\, (d^4+13\, d^3\, e\, x+78\, d^2\, e^2\, x^2+286\, d\, e^3\, x^3+715\, e^4\, x^4)+$$
$$5\, B\, (d^5+13\, d^4\, e\, x+78\, d^3\, e^2\, x^2+286\, d^2\, e^3\, x^3+715\, d\, e^4\, x^4+1287\, e^5\, x^5)\big)+$$
$$6\, a\, b^5\, e\, \big(7\, A\, e\, (d^5+13\, d^4\, e\, x+78\, d^3\, e^2\, x^2+286\, d^2\, e^3\, x^3+715\, d\, e^4\, x^4+1287\, e^5\, x^5)+$$
$$6\, B\, (d^6+13\, d^5\, e\, x+78\, d^4\, e^2\, x^2+286\, d^3\, e^3\, x^3+715\, d^2\, e^4\, x^4+1287\, d\, e^5\, x^5+1716\, e^6\, x^6)\big)+$$
$$b^6\, \big(6\, A\, e\, (d^6+13\, d^5\, e\, x+78\, d^4\, e^2\, x^2+286\, d^3\, e^3\, x^3+715\, d^2\, e^4\, x^4+1287\, d\, e^5\, x^5+1716\, e^6\, x^6)+7\, B\, (d^7+$$
$$13\, d^6\, e\, x+78\, d^5\, e^2\, x^2+286\, d^4\, e^3\, x^3+715\, d^3\, e^4\, x^4+1287\, d^2\, e^5\, x^5+1716\, d\, e^6\, x^6+1716\, e^7\, x^7)\big)\Big)$$

Problem 1062: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b\, x)^6\, (A+B\, x)}{(d+e\, x)^{15}}\, dx$$

Optimal (type 1, 292 leaves, 2 steps):

$$\frac{(b\, d-a\, e)^6\, (B\, d-A\, e)}{14\, e^8\, (d+e\, x)^{14}}-\frac{(b\, d-a\, e)^5\, (7\, b\, B\, d-6\, A\, b\, e-a\, B\, e)}{13\, e^8\, (d+e\, x)^{13}}+$$
$$\frac{b\, (b\, d-a\, e)^4\, (7\, b\, B\, d-5\, A\, b\, e-2\, a\, B\, e)}{4\, e^8\, (d+e\, x)^{12}}-\frac{5\, b^2\, (b\, d-a\, e)^3\, (7\, b\, B\, d-4\, A\, b\, e-3\, a\, B\, e)}{11\, e^8\, (d+e\, x)^{11}}+$$
$$\frac{b^3\, (b\, d-a\, e)^2\, (7\, b\, B\, d-3\, A\, b\, e-4\, a\, B\, e)}{2\, e^8\, (d+e\, x)^{10}}-\frac{b^4\, (b\, d-a\, e)\, (7\, b\, B\, d-2\, A\, b\, e-5\, a\, B\, e)}{3\, e^8\, (d+e\, x)^9}+$$
$$\frac{b^5\, (7\, b\, B\, d-A\, b\, e-6\, a\, B\, e)}{8\, e^8\, (d+e\, x)^8}-\frac{b^6\, B}{7\, e^8\, (d+e\, x)^7}$$

Result (type 1, 602 leaves):

$$-\frac{1}{24024\, e^8\, (d+e\, x)^{14}}\Big(132\, a^6\, e^6\, (13\, A\, e+B\, (d+14\, e\, x))+132\, a^5\, b\, e^5\, \big(6\, A\, e\, (d+14\, e\, x)+B\, (d^2+14\, d\, e\, x+91\, e^2\, x^2)\big)+$$
$$30\, a^4\, b^2\, e^4\, \big(11\, A\, e\, (d^2+14\, d\, e\, x+91\, e^2\, x^2)+3\, B\, (d^3+14\, d^2\, e\, x+91\, d\, e^2\, x^2+364\, e^3\, x^3)\big)+$$
$$24\, a^3\, b^3\, e^3\, \big(5\, A\, e\, (d^3+14\, d^2\, e\, x+91\, d\, e^2\, x^2+364\, e^3\, x^3)+$$
$$2\, B\, (d^4+14\, d^3\, e\, x+91\, d^2\, e^2\, x^2+364\, d\, e^3\, x^3+1001\, e^4\, x^4)\big)+$$
$$4\, a^2\, b^4\, e^2\, \big(9\, A\, e\, (d^4+14\, d^3\, e\, x+91\, d^2\, e^2\, x^2+364\, d\, e^3\, x^3+1001\, e^4\, x^4)+$$
$$5\, B\, (d^5+14\, d^4\, e\, x+91\, d^3\, e^2\, x^2+364\, d^2\, e^3\, x^3+1001\, d\, e^4\, x^4+2002\, e^5\, x^5)\big)+$$
$$2\, a\, b^5\, e\, \big(4\, A\, e\, (d^5+14\, d^4\, e\, x+91\, d^3\, e^2\, x^2+364\, d^2\, e^3\, x^3+1001\, d\, e^4\, x^4+2002\, e^5\, x^5)+$$
$$3\, B\, (d^6+14\, d^5\, e\, x+91\, d^4\, e^2\, x^2+364\, d^3\, e^3\, x^3+1001\, d^2\, e^4\, x^4+2002\, d\, e^5\, x^5+3003\, e^6\, x^6)\big)+b^6$$
$$\big(A\, e\, (d^6+14\, d^5\, e\, x+91\, d^4\, e^2\, x^2+364\, d^3\, e^3\, x^3+1001\, d^2\, e^4\, x^4+2002\, d\, e^5\, x^5+3003\, e^6\, x^6)+B\, (d^7+14$$
$$d^6\, e\, x+91\, d^5\, e^2\, x^2+364\, d^4\, e^3\, x^3+1001\, d^3\, e^4\, x^4+2002\, d^2\, e^5\, x^5+3003\, d\, e^6\, x^6+3432\, e^7\, x^7)\big)\Big)$$

Problem 1063: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^{10} (A+B x) (d+e x)^{13} \, dx$$

Optimal (type 1, 464 leaves, 2 steps):

$$-\frac{(b d-a e)^{10} (B d-A e) (d+e x)^{14}}{14 e^{12}}+\frac{(b d-a e)^9 (11 b B d-10 A b e-a B e) (d+e x)^{15}}{15 e^{12}}-\frac{5 b (b d-a e)^8 (11 b B d-9 A b e-2 a B e) (d+e x)^{16}}{16 e^{12}}+\frac{15 b^2 (b d-a e)^7 (11 b B d-8 A b e-3 a B e) (d+e x)^{17}}{17 e^{12}}-\frac{5 b^3 (b d-a e)^6 (11 b B d-7 A b e-4 a B e) (d+e x)^{18}}{3 e^{12}}+\frac{42 b^4 (b d-a e)^5 (11 b B d-6 A b e-5 a B e) (d+e x)^{19}}{19 e^{12}}-\frac{21 b^5 (b d-a e)^4 (11 b B d-5 A b e-6 a B e) (d+e x)^{20}}{10 e^{12}}+\frac{10 b^6 (b d-a e)^3 (11 b B d-4 A b e-7 a B e) (d+e x)^{21}}{7 e^{12}}-\frac{15 b^7 (b d-a e)^2 (11 b B d-3 A b e-8 a B e) (d+e x)^{22}}{22 e^{12}}+\frac{5 b^8 (b d-a e) (11 b B d-2 A b e-9 a B e) (d+e x)^{23}}{23 e^{12}}-\frac{b^9 (11 b B d-A b e-10 a B e) (d+e x)^{24}}{24 e^{12}}+\frac{b^{10} B (d+e x)^{25}}{25 e^{12}}$$

Result (type 1, 3532 leaves):

$$a^{10} A d^{13} x+\frac{1}{2} a^9 d^{12} (10 A b d+a B d+13 a A e) x^2+\frac{1}{3} a^8 d^{11} \left(a B d (10 b d+13 a e)+A \left(45 b^2 d^2+130 a b d e+78 a^2 e^2\right)\right) x^3+\frac{1}{4} a^7 d^{10} \left(a B d \left(45 b^2 d^2+130 a b d e+78 a^2 e^2\right)+A \left(120 b^3 d^3+585 a b^2 d^2 e+780 a^2 b d e^2+286 a^3 e^3\right)\right) x^4+\frac{1}{5} a^6 d^9 \left(a B d \left(120 b^3 d^3+585 a b^2 d^2 e+780 a^2 b d e^2+286 a^3 e^3\right)+5 A \left(42 b^4 d^4+312 a b^3 d^3 e+702 a^2 b^2 d^2 e^2+572 a^3 b d e^3+143 a^4 e^4\right)\right) x^5+\frac{1}{6} a^5 d^8 \left(5 a B d \left(42 b^4 d^4+312 a b^3 d^3 e+702 a^2 b^2 d^2 e^2+572 a^3 b d e^3+143 a^4 e^4\right)+A \left(252 b^5 d^5+2730 a b^4 d^4 e+9360 a^2 b^3 d^3 e^2+12870 a^3 b^2 d^2 e^3+7150 a^4 b d e^4+1287 a^5 e^5\right)\right) x^6+\frac{1}{7} a^4 d^7 \left(a B d \left(252 b^5 d^5+2730 a b^4 d^4 e+9360 a^2 b^3 d^3 e^2+12870 a^3 b^2 d^2 e^3+7150 a^4 b d e^4+1287 a^5 e^5\right)+3 A \left(70 b^6 d^6+1092 a b^5 d^5 e+5460 a^2 b^4 d^4 e^2+11440 a^3 b^3 d^3 e^3+10725 a^4 b^2 d^2 e^4+4290 a^5 b d e^5+572 a^6 e^6\right)\right) x^7+$$

$$\frac{3}{8} a^3 d^6 \left(a B d \left(70 b^6 d^6 + 1092 a b^5 d^5 e + 5460 a^2 b^4 d^4 e^2 + 11440 a^3 b^3 d^3 e^3 + 10725 a^4 b^2 d^2 e^4 + 4290 a^5 b d e^5 + 572 a^6 e^6\right) + A \left(40 b^7 d^7 + 910 a b^6 d^6 e + 6552 a^2 b^5 d^5 e^2 + 20020 a^3 b^4 d^4 e^3 + 28600 a^4 b^3 d^3 e^4 + 19305 a^5 b^2 d^2 e^5 + 5720 a^6 b d e^6 + 572 a^7 e^7\right)\right) x^8 +$$

$$\frac{1}{3} a^2 d^5 \left(a B d \left(40 b^7 d^7 + 910 a b^6 d^6 e + 6552 a^2 b^5 d^5 e^2 + 20020 a^3 b^4 d^4 e^3 + 28600 a^4 b^3 d^3 e^4 + 19305 a^5 b^2 d^2 e^5 + 5720 a^6 b d e^6 + 572 a^7 e^7\right) + A \left(15 b^8 d^8 + 520 a b^7 d^7 e + 5460 a^2 b^6 d^6 e^2 + 24024 a^3 b^5 d^5 e^3 + 50050 a^4 b^4 d^4 e^4 + 51480 a^5 b^3 d^3 e^5 + 25740 a^6 b^2 d^2 e^6 + 5720 a^7 b d e^7 + 429 a^8 e^8\right)\right) x^9 +$$

$$\frac{1}{10} a d^4 \left(3 a B d \left(15 b^8 d^8 + 520 a b^7 d^7 e + 5460 a^2 b^6 d^6 e^2 + 24024 a^3 b^5 d^5 e^3 + 50050 a^4 b^4 d^4 e^4 + 51480 a^5 b^3 d^3 e^5 + 25740 a^6 b^2 d^2 e^6 + 5720 a^7 b d e^7 + 429 a^8 e^8\right) + 5 A \left(2 b^9 d^9 + 117 a b^8 d^8 e + 1872 a^2 b^7 d^7 e^2 + 12012 a^3 b^6 d^6 e^3 + 36036 a^4 b^5 d^5 e^4 + 54054 a^5 b^4 d^4 e^5 + 41184 a^6 b^3 d^3 e^6 + 15444 a^7 b^2 d^2 e^7 + 2574 a^8 b d e^8 + 143 a^9 e^9\right)\right) x^{10} +$$

$$\frac{1}{11} d^3 \left(5 a B d \left(2 b^9 d^9 + 117 a b^8 d^8 e + 1872 a^2 b^7 d^7 e^2 + 12012 a^3 b^6 d^6 e^3 + 36036 a^4 b^5 d^5 e^4 + 54054 a^5 b^4 d^4 e^5 + 41184 a^6 b^3 d^3 e^6 + 15444 a^7 b^2 d^2 e^7 + 2574 a^8 b d e^8 + 143 a^9 e^9\right) + A \left(b^{10} d^{10} + 130 a b^9 d^9 e + 3510 a^2 b^8 d^8 e^2 + 34320 a^3 b^7 d^7 e^3 + 150150 a^4 b^6 d^6 e^4 + 324324 a^5 b^5 d^5 e^5 + 360360 a^6 b^4 d^4 e^6 + 205920 a^7 b^3 d^3 e^7 + 57915 a^8 b^2 d^2 e^8 + 7150 a^9 b d e^9 + 286 a^{10} e^{10}\right)\right)$$

$$x^{11} + \frac{1}{12} d^2 \left(360360 a^6 b^4 d^4 e^6 (B d + A e) + 1430 a^9 b d e^9 (5 B d + 2 A e) + 51480 a^7 b^3 d^3 e^7 (4 B d + 3 A e) + 26 a^{10} e^{10} (11 B d + 3 A e) + 108108 a^5 b^5 d^5 e^5 (3 B d + 4 A e) + 17160 a^3 b^7 d^7 e^3 (2 B d + 5 A e) + 6435 a^8 b^2 d^2 e^8 (9 B d + 5 A e) + 130 a b^9 d^9 e (B d + 6 A e) + 30030 a^4 b^6 d^6 e^4 (5 B d + 9 A e) + 1170 a^2 b^8 d^8 e^2 (3 B d + 11 A e) + b^{10} d^{10} (B d + 13 A e)\right) x^{12} +$$

$$d e \left(33264 a^5 b^5 d^5 e^5 (B d + A e) + a^{10} e^{10} (6 B d + A e) + 495 a^8 b^2 d^2 e^8 (5 B d + 2 A e) + 6930 a^6 b^4 d^4 e^6 (4 B d + 3 A e) + 20 a^9 b d e^9 (11 B d + 3 A e) + 6930 a^4 b^6 d^6 e^4 (3 B d + 4 A e) + 495 a^2 b^8 d^8 e^2 (2 B d + 5 A e) + 1320 a^7 b^3 d^3 e^7 (9 B d + 5 A e) + b^{10} d^{10} (B d + 6 A e) + 1320 a^3 b^7 d^7 e^3 (5 B d + 9 A e) + 20 a b^9 d^9 e (3 B d + 11 A e)\right) x^{13} +$$

$$\frac{1}{14} e^2 \left(360360 a^4 b^6 d^6 e^4 (B d + A e) + 130 a^9 b d e^9 (6 B d + A e) + a^{10} e^{10} (13 B d + A e) + 17160 a^7 b^3 d^3 e^7 (5 B d + 2 A e) + 108108 a^5 b^5 d^5 e^5 (4 B d + 3 A e) + 1170 a^8 b^2 d^2 e^8 (11 B d + 3 A e) + 51480 a^3 b^7 d^7 e^3 (3 B d + 4 A e) + 1430 a b^9 d^9 e (2 B d + 5 A e) + 30030 a^6 b^4 d^4 e^6 (9 B d + 5 A e) + 6435 a^2 b^8 d^8 e^2 (5 B d + 9 A e) + 26 b^{10} d^{10} (3 B d + 11 A e)\right) x^{14} +$$

$$\frac{1}{15} e^3 \left(a^{10} B e^{10} + 205920 a^3 b^7 d^6 e^3 (B d + A e) + 585 a^8 b^2 d e^8 (6 B d + A e) + 10 a^9 b e^9 (13 B d + A e) + 30030 a^6 b^4 d^3 e^6 (5 B d + 2 A e) + 90090 a^4 b^6 d^5 e^4 (4 B d + 3 A e) + 3120 a^7 b^3 d^2 e^7 (11 B d + 3 A e) + 19305 a^2 b^8 d^7 e^2 (3 B d + 4 A e) + 143 b^{10} d^9 (2 B d + 5 A e) + 36036 a^5 b^5 d^4 e^5 (9 B d + 5 A e) + 1430 a b^9 d^8 e (5 B d + 9 A e)\right) x^{15} +$$

$$\frac{1}{16} b e^4 \left(10 a^9 B e^9 + 77220 a^2 b^7 d^6 e^2 (B d + A e) + 1560 a^7 b^2 d e^7 (6 B d + A e) + 45 a^8 b e^8 (13 B d + A e) + 36036 a^5 b^4 d^3 e^5 (5 B d + 2 A e) + 51480 a^3 b^6 d^5 e^3 (4 B d + 3 A e) + 5460 a^6 b^3 d^2 e^6 (11 B d + 3 A e) + 4290 a b^8 d^7 e (3 B d + 4 A e) + 30030 a^4 b^5 d^4 e^4 (9 B d + 5 A e) + 143 b^9 d^8 (5 B d + 9 A e)\right) x^{16} +$$

$$\frac{3}{17} b^2 e^5 \left(15 a^8 B e^8 + 5720 a b^7 d^6 e (B d + A e) + 910 a^6 b^2 d e^6 (6 B d + A e) + 40 a^7 b e^7 (13 B d + A e) + 10010 a^4 b^4 d^3 e^4 (5 B d + 2 A e) + 6435 a^2 b^6 d^5 e^2 (4 B d + 3 A e) + 2184 a^5 b^3 d^2 e^5 (11 B d + 3 A e) + 143 b^8 d^7 (3 B d + 4 A e) + 5720 a^3 b^5 d^4 e^3 (9 B d + 5 A e)\right) x^{17} +$$

$$\frac{1}{6} b^3 e^6 \left(40 a^7 B e^7 + 572 b^7 d^6 (B d + A e) + 1092 a^5 b^2 d e^5 (6 B d + A e) + 70 a^6 b e^6 (13 B d + A e) + 5720 a^3 b^4 d^3 e^3 (5 B d + 2 A e) + 1430 a b^6 d^5 e (4 B d + 3 A e) + 1820 a^4 b^3 d^2 e^4 (11 B d + 3 A e) + 2145 a^2 b^5 d^4 e^2 (9 B d + 5 A e)\right) x^{18} + \frac{1}{19} b^4 e^7 \left(210 a^6 B e^6 + 2730 a^4 b^2 d e^4 (6 B d + A e) + 252 a^5 b e^5 (13 B d + A e) + 6435 a^2 b^4 d^3 e^2 (5 B d + 2 A e) + 429 b^6 d^5 (4 B d + 3 A e) + 3120 a^3 b^3 d^2 e^3 (11 B d + 3 A e) + 1430 a b^5 d^4 e (9 B d + 5 A e)\right) x^{19} +$$

$$\frac{1}{20} b^5 e^8 \left(252 a^5 B e^5 + 1560 a^3 b^2 d e^3 (6 B d + A e) + 210 a^4 b e^4 (13 B d + A e) + 1430 a b^4 d^3 e (5 B d + 2 A e) + 1170 a^2 b^3 d^2 e^2 (11 B d + 3 A e) + 143 b^5 d^4 (9 B d + 5 A e)\right) x^{20} +$$

$$\frac{1}{21} b^6 e^9 \left(210 a^4 B e^4 + 585 a^2 b^2 d e^2 (6 B d + A e) + 120 a^3 b e^3 (13 B d + A e) + 143 b^4 d^3 (5 B d + 2 A e) + 260 a b^3 d^2 e (11 B d + 3 A e)\right) x^{21} +$$

$$\frac{1}{22} b^7 e^{10} \left(120 a^3 B e^3 + 130 a b^2 d e (6 B d + A e) + 45 a^2 b e^2 (13 B d + A e) + 26 b^3 d^2 (11 B d + 3 A e)\right) x^{22} +$$

$$\frac{1}{23} b^8 e^{11} \left(45 a^2 B e^2 + 13 b^2 d (6 B d + A e) + 10 a b e (13 B d + A e)\right) x^{23} +$$

$$\frac{1}{24} b^9 e^{12} (13 b B d + A b e + 10 a B e) x^{24} +$$

$$\frac{1}{25} b^{10} B e^{13} x^{25}$$

Problem 1064: Result more than twice size of optimal antiderivative.

$$\int (a + b x)^{10} (A + B x) (d + e x)^{12} \, dx$$

Optimal (type 1, 464 leaves, 2 steps):

$$-\frac{(b d-a e)^{10} (B d-A e) (d+e x)^{13}}{13 e^{12}}+\frac{(b d-a e)^9 (11 b B d-10 A b e-a B e) (d+e x)^{14}}{14 e^{12}}-\frac{b (b d-a e)^8 (11 b B d-9 A b e-2 a B e) (d+e x)^{15}}{3 e^{12}}+\frac{15 b^2 (b d-a e)^7 (11 b B d-8 A b e-3 a B e) (d+e x)^{16}}{16 e^{12}}-\frac{30 b^3 (b d-a e)^6 (11 b B d-7 A b e-4 a B e) (d+e x)^{17}}{17 e^{12}}+\frac{7 b^4 (b d-a e)^5 (11 b B d-6 A b e-5 a B e) (d+e x)^{18}}{3 e^{12}}-\frac{42 b^5 (b d-a e)^4 (11 b B d-5 A b e-6 a B e) (d+e x)^{19}}{19 e^{12}}+\frac{3 b^6 (b d-a e)^3 (11 b B d-4 A b e-7 a B e) (d+e x)^{20}}{2 e^{12}}-\frac{5 b^7 (b d-a e)^2 (11 b B d-3 A b e-8 a B e) (d+e x)^{21}}{7 e^{12}}+\frac{5 b^8 (b d-a e) (11 b B d-2 A b e-9 a B e) (d+e x)^{22}}{22 e^{12}}-\frac{b^9 (11 b B d-A b e-10 a B e) (d+e x)^{23}}{23 e^{12}}+\frac{b^{10} B (d+e x)^{24}}{24 e^{12}}$$

Result (type 1, 3320 leaves):

$$a^{10} A d^{12} x+\frac{1}{2} a^9 d^{11} (a B d+2 A (5 b d+6 a e)) x^2+\frac{1}{3} a^8 d^{10} \left(2 a B d (5 b d+6 a e)+3 A \left(15 b^2 d^2+40 a b d e+22 a^2 e^2\right)\right) x^3+\frac{1}{4} a^7 d^9 \left(3 a B d \left(15 b^2 d^2+40 a b d e+22 a^2 e^2\right)+20 A \left(6 b^3 d^3+27 a b^2 d^2 e+33 a^2 b d e^2+11 a^3 e^3\right)\right) x^4+a^6 d^8 \left(4 a B d \left(6 b^3 d^3+27 a b^2 d^2 e+33 a^2 b d e^2+11 a^3 e^3\right)+A \left(42 b^4 d^4+288 a b^3 d^3 e+594 a^2 b^2 d^2 e^2+440 a^3 b d e^3+99 a^4 e^4\right)\right) x^5+\frac{1}{6} a^5 d^7 \left(5 a B d \left(42 b^4 d^4+288 a b^3 d^3 e+594 a^2 b^2 d^2 e^2+440 a^3 b d e^3+99 a^4 e^4\right)+18 A \left(14 b^5 d^5+140 a b^4 d^4 e+440 a^2 b^3 d^3 e^2+550 a^3 b^2 d^2 e^3+275 a^4 b d e^4+44 a^5 e^5\right)\right) x^6+\frac{3}{7} a^4 d^6 \left(6 a B d \left(14 b^5 d^5+140 a b^4 d^4 e+440 a^2 b^3 d^3 e^2+550 a^3 b^2 d^2 e^3+275 a^4 b d e^4+44 a^5 e^5\right)+A \left(70 b^6 d^6+1008 a b^5 d^5 e+4620 a^2 b^4 d^4 e^2+8800 a^3 b^3 d^3 e^3+7425 a^4 b^2 d^2 e^4+2640 a^5 b d e^5+308 a^6 e^6\right)\right) x^7+\frac{3}{8} a^3 d^5 \left(a B d \left(70 b^6 d^6+1008 a b^5 d^5 e+4620 a^2 b^4 d^4 e^2+8800 a^3 b^3 d^3 e^3+7425 a^4 b^2 d^2 e^4+2640 a^5 b d e^5+308 a^6 e^6\right)+8 A \left(5 b^7 d^7+105 a b^6 d^6 e+693 a^2 b^5 d^5 e^2+1925 a^3 b^4 d^4 e^3+2475 a^4 b^3 d^3 e^4+1485 a^5 b^2 d^2 e^5+385 a^6 b d e^6+33 a^7 e^7\right)\right) x^8+\frac{1}{3} a^2 d^4 \left(8 a B d \left(5 b^7 d^7+105 a b^6 d^6 e+693 a^2 b^5 d^5 e^2+1925 a^3 b^4 d^4 e^3+2475 a^4 b^3 d^3 e^4+1485 a^5 b^2 d^2 e^5+385 a^6 b d e^6+33 a^7 e^7\right)+15 A \left(b^8 d^8+32 a b^7 d^7 e+308 a^2 b^6 d^6 e^2+\right.\right.$$

$$1232\,a^3\,b^5\,d^5\,e^3+2310\,a^4\,b^4\,d^4\,e^4+2112\,a^5\,b^3\,d^3\,e^5+924\,a^6\,b^2\,d^2\,e^6+176\,a^7\,b\,d\,e^7+11\,a^8\,e^8\Big)\Big)$$

$$x^9+\frac{1}{2}\,a\,d^3\,\Big(9\,a\,B\,d\,\big(b^8\,d^8+32\,a\,b^7\,d^7\,e+308\,a^2\,b^6\,d^6\,e^2+1232\,a^3\,b^5\,d^5\,e^3+2310\,a^4\,b^4\,d^4\,e^4+2112\,a^5\,b^3\,d^3\,e^5+924\,a^6\,b^2\,d^2\,e^6+176\,a^7\,b\,d\,e^7+11\,a^8\,e^8\big)+2\,A\,\big(b^9\,d^9+54\,a\,b^8\,d^8\,e+792\,a^2\,b^7\,d^7\,e^2+4620\,a^3\,b^6\,d^6\,e^3+12\,474\,a^4\,b^5\,d^5\,e^4+16\,632\,a^5\,b^4\,d^4\,e^5+11\,088\,a^6\,b^3\,d^3\,e^6+3564\,a^7\,b^2\,d^2\,e^7+495\,a^8\,b\,d\,e^8+22\,a^9\,e^9\big)\Big)\,x^{10}+$$

$$\frac{1}{11}\,d^2\,\Big(10\,a\,B\,d\,\big(b^9\,d^9+54\,a\,b^8\,d^8\,e+792\,a^2\,b^7\,d^7\,e^2+4620\,a^3\,b^6\,d^6\,e^3+12\,474\,a^4\,b^5\,d^5\,e^4+16\,632\,a^5\,b^4\,d^4\,e^5+11\,088\,a^6\,b^3\,d^3\,e^6+3564\,a^7\,b^2\,d^2\,e^7+495\,a^8\,b\,d\,e^8+22\,a^9\,e^9\big)+A\,\big(b^{10}\,d^{10}+120\,a\,b^9\,d^9\,e+2970\,a^2\,b^8\,d^8\,e^2+26\,400\,a^3\,b^7\,d^7\,e^3+103\,950\,a^4\,b^6\,d^6\,e^4+199\,584\,a^5\,b^5\,d^5\,e^5+194\,040\,a^6\,b^4\,d^4\,e^6+95\,040\,a^7\,b^3\,d^3\,e^7+22\,275\,a^8\,b^2\,d^2\,e^8+2200\,a^9\,b\,d\,e^9+66\,a^{10}\,e^{10}\big)\Big)\,x^{11}+$$

$$\frac{1}{12}\,d\,\big(6\,a^{10}\,e^{10}\,(11\,B\,d+2\,A\,e)+220\,a^9\,b\,d\,e^9\,(10\,B\,d+3\,A\,e)+2475\,a^8\,b^2\,d^2\,e^8\,(9\,B\,d+4\,A\,e)+11\,880\,a^7\,b^3\,d^3\,e^7\,(8\,B\,d+5\,A\,e)+27\,720\,a^6\,b^4\,d^4\,e^6\,(7\,B\,d+6\,A\,e)+33\,264\,a^5\,b^5\,d^5\,e^5\,(6\,B\,d+7\,A\,e)+20\,790\,a^4\,b^6\,d^6\,e^4\,(5\,B\,d+8\,A\,e)+6600\,a^3\,b^7\,d^7\,e^3\,(4\,B\,d+9\,A\,e)+990\,a^2\,b^8\,d^8\,e^2\,(3\,B\,d+10\,A\,e)+60\,a\,b^9\,d^9\,e\,(2\,B\,d+11\,A\,e)+b^{10}\,d^{10}\,(B\,d+12\,A\,e)\big)\,x^{12}+$$

$$\frac{1}{13}\,e\,\big(a^{10}\,e^{10}\,(12\,B\,d+A\,e)+60\,a^9\,b\,d\,e^9\,(11\,B\,d+2\,A\,e)+990\,a^8\,b^2\,d^2\,e^8\,(10\,B\,d+3\,A\,e)+6600\,a^7\,b^3\,d^3\,e^7\,(9\,B\,d+4\,A\,e)+20\,790\,a^6\,b^4\,d^4\,e^6\,(8\,B\,d+5\,A\,e)+33\,264\,a^5\,b^5\,d^5\,e^5\,(7\,B\,d+6\,A\,e)+27\,720\,a^4\,b^6\,d^6\,e^4\,(6\,B\,d+7\,A\,e)+11\,880\,a^3\,b^7\,d^7\,e^3\,(5\,B\,d+8\,A\,e)+2475\,a^2\,b^8\,d^8\,e^2\,(4\,B\,d+9\,A\,e)+220\,a\,b^9\,d^9\,e\,(3\,B\,d+10\,A\,e)+6\,b^{10}\,d^{10}\,(2\,B\,d+11\,A\,e)\big)\,x^{13}+$$

$$\frac{1}{14}\,e^2\,\big(a^{10}\,B\,e^{10}+10\,a^9\,b\,e^9\,(12\,B\,d+A\,e)+270\,a^8\,b^2\,d\,e^8\,(11\,B\,d+2\,A\,e)+2640\,a^7\,b^3\,d^2\,e^7\,(10\,B\,d+3\,A\,e)+11\,550\,a^6\,b^4\,d^3\,e^6\,(9\,B\,d+4\,A\,e)+24\,948\,a^5\,b^5\,d^4\,e^5\,(8\,B\,d+5\,A\,e)+27\,720\,a^4\,b^6\,d^5\,e^4\,(7\,B\,d+6\,A\,e)+15\,840\,a^3\,b^7\,d^6\,e^3\,(6\,B\,d+7\,A\,e)+4455\,a^2\,b^8\,d^7\,e^2\,(5\,B\,d+8\,A\,e)+550\,a\,b^9\,d^8\,e\,(4\,B\,d+9\,A\,e)+22\,b^{10}\,d^9\,(3\,B\,d+10\,A\,e)\big)\,x^{14}+$$

$$\frac{1}{3}\,b\,e^3\,\big(2\,a^9\,B\,e^9+9\,a^8\,b\,e^8\,(12\,B\,d+A\,e)+144\,a^7\,b^2\,d\,e^7\,(11\,B\,d+2\,A\,e)+924\,a^6\,b^3\,d^2\,e^6\,(10\,B\,d+3\,A\,e)+2772\,a^5\,b^4\,d^3\,e^5\,(9\,B\,d+4\,A\,e)+4158\,a^4\,b^5\,d^4\,e^4\,(8\,B\,d+5\,A\,e)+3168\,a^3\,b^6\,d^5\,e^3\,(7\,B\,d+6\,A\,e)+1188\,a^2\,b^7\,d^6\,e^2\,(6\,B\,d+7\,A\,e)+198\,a\,b^8\,d^7\,e\,(5\,B\,d+8\,A\,e)+11\,b^9\,d^8\,(4\,B\,d+9\,A\,e)\big)\,x^{15}+$$

$$\frac{3}{16}\,b^2\,e^4\,\big(15\,a^8\,B\,e^8+40\,a^7\,b\,e^7\,(12\,B\,d+A\,e)+420\,a^6\,b^2\,d\,e^6\,(11\,B\,d+2\,A\,e)+1848\,a^5\,b^3\,d^2\,e^5\,(10\,B\,d+3\,A\,e)+3850\,a^4\,b^4\,d^3\,e^4\,(9\,B\,d+4\,A\,e)+3960\,a^3\,b^5\,d^4\,e^3\,(8\,B\,d+5\,A\,e)+1980\,a^2\,b^6\,d^5\,e^2\,(7\,B\,d+6\,A\,e)+440\,a\,b^7\,d^6\,e\,(6\,B\,d+7\,A\,e)+33\,b^8\,d^7\,(5\,B\,d+8\,A\,e)\big)\,x^{16}+$$

$$\frac{3}{17}\,b^3\,e^5\,\big(40\,a^7\,B\,e^7+70\,a^6\,b\,e^6\,(12\,B\,d+A\,e)+504\,a^5\,b^2\,d\,e^5\,(11\,B\,d+2\,A\,e)+1540\,a^4\,b^3\,d^2\,e^4\,(10\,B\,d+3\,A\,e)+2200\,a^3\,b^4\,d^3\,e^3\,(9\,B\,d+4\,A\,e)+1485\,a^2\,b^5\,d^4\,e^2\,(8\,B\,d+5\,A\,e)+440\,a\,b^6\,d^5\,e\,(7\,B\,d+6\,A\,e)+44\,b^7\,d^6\,(6\,B\,d+7\,A\,e)\big)\,x^{17}+\frac{1}{6}\,b^4\,e^6$$

$$\big(70\,a^6\,B\,e^6+84\,a^5\,b\,e^5\,(12\,B\,d+A\,e)+420\,a^4\,b^2\,d\,e^4\,(11\,B\,d+2\,A\,e)+880\,a^3\,b^3\,d^2\,e^3\,(10\,B\,d+3\,A\,e)+825\,a^2\,b^4\,d^3\,e^2\,(9\,B\,d+4\,A\,e)+330\,a\,b^5\,d^4\,e\,(8\,B\,d+5\,A\,e)+44\,b^6\,d^5\,(7\,B\,d+6\,A\,e)\big)\,x^{18}+$$

$$\frac{1}{19}\,b^5\,e^7\,\big(252\,a^5\,B\,e^5+210\,a^4\,b\,e^4\,(12\,B\,d+A\,e)+720\,a^3\,b^2\,d\,e^3\,(11\,B\,d+2\,A\,e)+990\,a^2\,b^3\,d^2\,e^2\,(10\,B\,d+3\,A\,e)+550\,a\,b^4\,d^3\,e\,(9\,B\,d+4\,A\,e)+99\,b^5\,d^4\,(8\,B\,d+5\,A\,e)\big)\,x^{19}+$$

$$\frac{1}{4}\,b^6\,e^8\,\big(42\,a^4\,B\,e^4+24\,a^3\,b\,e^3\,(12\,B\,d+A\,e)+54\,a^2\,b^2\,d\,e^2\,(11\,B\,d+2\,A\,e)+$$

$$44\, a\, b^3\, d^2\, e\, (10\, B\, d + 3\, A\, e) + 11\, b^4\, d^3\, (9\, B\, d + 4\, A\, e)\Big)\, x^{20} + \frac{1}{21}\, b^7\, e^9$$
$$\Big(120\, a^3\, B\, e^3 + 45\, a^2\, b\, e^2\, (12\, B\, d + A\, e) + 60\, a\, b^2\, d\, e\, (11\, B\, d + 2\, A\, e) + 22\, b^3\, d^2\, (10\, B\, d + 3\, A\, e)\Big)\, x^{21} +$$
$$\frac{1}{22}\, b^8\, e^{10}\, \Big(45\, a^2\, B\, e^2 + 10\, a\, b\, e\, (12\, B\, d + A\, e) + 6\, b^2\, d\, (11\, B\, d + 2\, A\, e)\Big)\, x^{22} +$$
$$\frac{1}{23}\, b^9\, e^{11}\, (12\, b\, B\, d + A\, b\, e + 10\, a\, B\, e)\, x^{23} +$$
$$\frac{1}{24}\, b^{10}\, B\, e^{12}\, x^{24}$$

Problem 1065: Result more than twice size of optimal antiderivative.

$$\int (a + b\, x)^{10}\, (A + B\, x)\, (d + e\, x)^{11}\, dx$$

Optimal (type 1, 461 leaves, 2 steps):

$$-\frac{(b\, d - a\, e)^{10}\, (B\, d - A\, e)\, (d + e\, x)^{12}}{12\, e^{12}} + \frac{(b\, d - a\, e)^9\, (11\, b\, B\, d - 10\, A\, b\, e - a\, B\, e)\, (d + e\, x)^{13}}{13\, e^{12}} -$$
$$\frac{5\, b\, (b\, d - a\, e)^8\, (11\, b\, B\, d - 9\, A\, b\, e - 2\, a\, B\, e)\, (d + e\, x)^{14}}{14\, e^{12}} +$$
$$\frac{b^2\, (b\, d - a\, e)^7\, (11\, b\, B\, d - 8\, A\, b\, e - 3\, a\, B\, e)\, (d + e\, x)^{15}}{e^{12}} -$$
$$\frac{15\, b^3\, (b\, d - a\, e)^6\, (11\, b\, B\, d - 7\, A\, b\, e - 4\, a\, B\, e)\, (d + e\, x)^{16}}{8\, e^{12}} +$$
$$\frac{42\, b^4\, (b\, d - a\, e)^5\, (11\, b\, B\, d - 6\, A\, b\, e - 5\, a\, B\, e)\, (d + e\, x)^{17}}{17\, e^{12}} -$$
$$\frac{7\, b^5\, (b\, d - a\, e)^4\, (11\, b\, B\, d - 5\, A\, b\, e - 6\, a\, B\, e)\, (d + e\, x)^{18}}{3\, e^{12}} +$$
$$\frac{30\, b^6\, (b\, d - a\, e)^3\, (11\, b\, B\, d - 4\, A\, b\, e - 7\, a\, B\, e)\, (d + e\, x)^{19}}{19\, e^{12}} -$$
$$\frac{3\, b^7\, (b\, d - a\, e)^2\, (11\, b\, B\, d - 3\, A\, b\, e - 8\, a\, B\, e)\, (d + e\, x)^{20}}{4\, e^{12}} +$$
$$\frac{5\, b^8\, (b\, d - a\, e)\, (11\, b\, B\, d - 2\, A\, b\, e - 9\, a\, B\, e)\, (d + e\, x)^{21}}{21\, e^{12}} -$$
$$\frac{b^9\, (11\, b\, B\, d - A\, b\, e - 10\, a\, B\, e)\, (d + e\, x)^{22}}{22\, e^{12}} + \frac{b^{10}\, B\, (d + e\, x)^{23}}{23\, e^{12}}$$

Result (type 1, 3018 leaves):

$$a^{10}\, A\, d^{11}\, x + \frac{1}{2}\, a^9\, d^{10}\, (10\, A\, b\, d + a\, B\, d + 11\, a\, A\, e)\, x^2 +$$
$$\frac{1}{3}\, a^8\, d^9\, \Big(a\, B\, d\, (10\, b\, d + 11\, a\, e) + 5\, A\, (9\, b^2\, d^2 + 22\, a\, b\, d\, e + 11\, a^2\, e^2)\Big)\, x^3 +$$
$$\frac{5}{4}\, a^7\, d^8\, \Big(a\, B\, d\, (9\, b^2\, d^2 + 22\, a\, b\, d\, e + 11\, a^2\, e^2) + A\, (24\, b^3\, d^3 + 99\, a\, b^2\, d^2\, e + 110\, a^2\, b\, d\, e^2 + 33\, a^3\, e^3)\Big)\, x^4 +$$

$a^6 d^7 \left(a B d \left(24 b^3 d^3 + 99 a b^2 d^2 e + 110 a^2 b d e^2 + 33 a^3 e^3\right) + 3 A \left(14 b^4 d^4 + 88 a b^3 d^3 e + 165 a^2 b^2 d^2 e^2 + 110 a^3 b d e^3 + 22 a^4 e^4\right)\right) x^5 +$

$\frac{1}{2} a^5 d^6 \left(5 a B d \left(14 b^4 d^4 + 88 a b^3 d^3 e + 165 a^2 b^2 d^2 e^2 + 110 a^3 b d e^3 + 22 a^4 e^4\right) + A \left(84 b^5 d^5 + 770 a b^4 d^4 e + 2200 a^2 b^3 d^3 e^2 + 2475 a^3 b^2 d^2 e^3 + 1100 a^4 b d e^4 + 154 a^5 e^5\right)\right) x^6 +$

$\frac{3}{7} a^4 d^5 \left(a B d \left(84 b^5 d^5 + 770 a b^4 d^4 e + 2200 a^2 b^3 d^3 e^2 + 2475 a^3 b^2 d^2 e^3 + 1100 a^4 b d e^4 + 154 a^5 e^5\right) + 2 A \left(35 b^6 d^6 + 462 a b^5 d^5 e + 1925 a^2 b^4 d^4 e^2 + 3300 a^3 b^3 d^3 e^3 + 2475 a^4 b^2 d^2 e^4 + 770 a^5 b d e^5 + 77 a^6 e^6\right)\right) x^7 +$

$\frac{3}{4} a^3 d^4 \left(a B d \left(35 b^6 d^6 + 462 a b^5 d^5 e + 1925 a^2 b^4 d^4 e^2 + 3300 a^3 b^3 d^3 e^3 + 2475 a^4 b^2 d^2 e^4 + 770 a^5 b d e^5 + 77 a^6 e^6\right) + 5 A \left(4 b^7 d^7 + 77 a b^6 d^6 e + 462 a^2 b^5 d^5 e^2 + 1155 a^3 b^4 d^4 e^3 + 1320 a^4 b^3 d^3 e^4 + 693 a^5 b^2 d^2 e^5 + 154 a^6 b d e^6 + 11 a^7 e^7\right)\right) x^8 +$

$\frac{5}{3} a^2 d^3 \left(2 a B d \left(4 b^7 d^7 + 77 a b^6 d^6 e + 462 a^2 b^5 d^5 e^2 + 1155 a^3 b^4 d^4 e^3 + 1320 a^4 b^3 d^3 e^4 + 693 a^5 b^2 d^2 e^5 + 154 a^6 b d e^6 + 11 a^7 e^7\right) + A \left(3 b^8 d^8 + 88 a b^7 d^7 e + 770 a^2 b^6 d^6 e^2 + 2772 a^3 b^5 d^5 e^3 + 4620 a^4 b^4 d^4 e^4 + 3696 a^5 b^3 d^3 e^5 + 1386 a^6 b^2 d^2 e^6 + 220 a^7 b d e^7 + 11 a^8 e^8\right)\right) x^9 +$

$\frac{1}{2} a d^2 \left(3 a B d \left(3 b^8 d^8 + 88 a b^7 d^7 e + 770 a^2 b^6 d^6 e^2 + 2772 a^3 b^5 d^5 e^3 + 4620 a^4 b^4 d^4 e^4 + 3696 a^5 b^3 d^3 e^5 + 1386 a^6 b^2 d^2 e^6 + 220 a^7 b d e^7 + 11 a^8 e^8\right) + A \left(2 b^9 d^9 + 99 a b^8 d^8 e + 1320 a^2 b^7 d^7 e^2 + 6930 a^3 b^6 d^6 e^3 + 16632 a^4 b^5 d^5 e^4 + 19404 a^5 b^4 d^4 e^5 + 11088 a^6 b^3 d^3 e^6 + 2970 a^7 b^2 d^2 e^7 + 330 a^8 b d e^8 + 11 a^9 e^9\right)\right) x^{10} +$

$\frac{1}{11} d \left(5 a B d \left(2 b^9 d^9 + 99 a b^8 d^8 e + 1320 a^2 b^7 d^7 e^2 + 6930 a^3 b^6 d^6 e^3 + 16632 a^4 b^5 d^5 e^4 + 19404 a^5 b^4 d^4 e^5 + 11088 a^6 b^3 d^3 e^6 + 2970 a^7 b^2 d^2 e^7 + 330 a^8 b d e^8 + 11 a^9 e^9\right) + A \left(b^{10} d^{10} + 110 a b^9 d^9 e + 2475 a^2 b^8 d^8 e^2 + 19800 a^3 b^7 d^7 e^3 + 69300 a^4 b^6 d^6 e^4 + 116424 a^5 b^5 d^5 e^5 + 97020 a^6 b^4 d^4 e^6 + 39600 a^7 b^3 d^3 e^7 + 7425 a^8 b^2 d^2 e^8 + 550 a^9 b d e^9 + 11 a^{10} e^{10}\right)\right) x^{11} +$

$\frac{1}{12} \left(116424 a^5 b^5 d^5 e^5 (B d + A e) + 19800 a^7 b^3 d^3 e^7 (2 B d + A e) + 2475 a^8 b^2 d^2 e^8 (3 B d + A e) + 110 a^9 b d e^9 (5 B d + A e) + a^{10} e^{10} (11 B d + A e) + 19800 a^3 b^7 d^7 e^3 (B d + 2 A e) + 2475 a^2 b^8 d^8 e^2 (B d + 3 A e) + 110 a b^9 d^9 e (B d + 5 A e) + 13860 a^6 b^4 d^4 e^6 (7 B d + 5 A e) + 13860 a^4 b^6 d^6 e^4 (5 B d + 7 A e) + b^{10} d^{10} (B d + 11 A e)\right) x^{12} +$

$\frac{1}{13} e \left(a^{10} B e^{10} + 97020 a^4 b^6 d^5 e^4 (B d + A e) + 34650 a^6 b^4 d^3 e^6 (2 B d + A e) + 6600 a^7 b^3 d^2 e^7 (3 B d + A e) + 495 a^8 b^2 d e^8 (5 B d + A e) + 10 a^9 b e^9 (11 B d + A e) + 7425 a^2 b^8 d^7 e^2 (B d + 2 A e) + 550 a b^9 d^8 e (B d + 3 A e) + 11 b^{10} d^9 (B d + 5 A e) + 16632 a^5 b^5 d^4 e^5 (7 B d + 5 A e) + 7920 a^3 b^7 d^6 e^3 (5 B d + 7 A e)\right) x^{13} +$

$\frac{5}{14} b e^2 \left(2 a^9 B e^9 + 11088 a^3 b^6 d^5 e^3 (B d + A e) + 8316 a^5 b^4 d^3 e^5 (2 B d + A e) + 2310 a^6 b^3 d^2 e^6 (3 B d + A e) + 264 a^7 b^2 d e^7 (5 B d + A e) + 9 a^8 b e^8 (11 B d + A e) + 330 a b^8 d^7 e (B d + 2 A e) + 11 b^9 d^8 (B d + 3 A e) + 2772 a^4 b^5 d^4 e^4 (7 B d + 5 A e) + 594 a^2 b^7 d^6 e^2 (5 B d + 7 A e)\right) x^{14} +$

$b^2 e^3 \left(3 a^8 B e^8 + 1386 a^2 b^6 d^5 e^2 (B d + A e) + 2310 a^4 b^4 d^3 e^4 (2 B d + A e) + 924 a^5 b^3 d^2 e^5 (3 B d + A e) + 154 a^6 b^2 d e^6 (5 B d + A e) + 8 a^7 b e^7 (11 B d + A e) + 11 b^8 d^7 (B d + 2 A e) + 528 a^3 b^5 d^4 e^3 (7 B d + 5 A e) + 44 a b^7 d^6 e (5 B d + 7 A e)\right) x^{15} +$

$\frac{3}{8} b^3 e^4 \left(20 a^7 B e^7 + 770 a b^6 d^5 e (B d + A e) + 3300 a^3 b^4 d^3 e^3 (2 B d + A e) +\right.$

$$1925\,a^4\,b^3\,d^2\,e^4\,(3\,B\,d+A\,e)+462\,a^5\,b^2\,d\,e^5\,(5\,B\,d+A\,e)+35\,a^6\,b\,e^6\,(11\,B\,d+A\,e)+$$
$$495\,a^2\,b^5\,d^4\,e^2\,(7\,B\,d+5\,A\,e)+11\,b^7\,d^6\,(5\,B\,d+7\,A\,e))\,x^{16}+$$
$$\frac{3}{17}\,b^4\,e^5\,(70\,a^6\,B\,e^6+154\,b^6\,d^5\,(B\,d+A\,e)+2475\,a^2\,b^4\,d^3\,e^2\,(2\,B\,d+A\,e)+2200\,a^3\,b^3\,d^2\,e^3\,(3\,B\,d+A\,e)+$$
$$770\,a^4\,b^2\,d\,e^4\,(5\,B\,d+A\,e)+84\,a^5\,b\,e^5\,(11\,B\,d+A\,e)+220\,a\,b^5\,d^4\,e\,(7\,B\,d+5\,A\,e))\,x^{17}+$$
$$\frac{1}{6}\,b^5\,e^6\,(84\,a^5\,B\,e^5+550\,a\,b^4\,d^3\,e\,(2\,B\,d+A\,e)+825\,a^2\,b^3\,d^2\,e^2\,(3\,B\,d+A\,e)+$$
$$440\,a^3\,b^2\,d\,e^3\,(5\,B\,d+A\,e)+70\,a^4\,b\,e^4\,(11\,B\,d+A\,e)+22\,b^5\,d^4\,(7\,B\,d+5\,A\,e))\,x^{18}+$$
$$\frac{5}{19}\,b^6\,e^7\,(42\,a^4\,B\,e^4+33\,b^4\,d^3\,(2\,B\,d+A\,e)+110\,a\,b^3\,d^2\,e\,(3\,B\,d+A\,e)+$$
$$99\,a^2\,b^2\,d\,e^2\,(5\,B\,d+A\,e)+24\,a^3\,b\,e^3\,(11\,B\,d+A\,e))\,x^{19}+$$
$$\frac{1}{4}\,b^7\,e^8\,(24\,a^3\,B\,e^3+11\,b^3\,d^2\,(3\,B\,d+A\,e)+22\,a\,b^2\,d\,e\,(5\,B\,d+A\,e)+9\,a^2\,b\,e^2\,(11\,B\,d+A\,e))\,x^{20}+$$
$$\frac{1}{21}\,b^8\,e^9\,(45\,a^2\,B\,e^2+11\,b^2\,d\,(5\,B\,d+A\,e)+10\,a\,b\,e\,(11\,B\,d+A\,e))\,x^{21}+$$
$$\frac{1}{22}\,b^9\,e^{10}\,(11\,b\,B\,d+A\,b\,e+10\,a\,B\,e)\,x^{22}+$$
$$\frac{1}{23}\,b^{10}\,B\,e^{11}\,x^{23}$$

Problem 1066: Result more than twice size of optimal antiderivative.

$$\int (a+b\,x)^{10}\,(A+B\,x)\,(d+e\,x)^{10}\,dx$$

Optimal (type 1, 460 leaves, 2 steps) :

$$\frac{(A b-a B)(b d-a e)^{10}(a+b x)^{11}}{11 b^{12}}+\frac{(b d-a e)^9(b B d+10 A b e-11 a B e)(a+b x)^{12}}{12 b^{12}}+$$
$$\frac{5 e (b d-a e)^8(2 b B d+9 A b e-11 a B e)(a+b x)^{13}}{13 b^{12}}+$$
$$\frac{15 e^2 (b d-a e)^7(3 b B d+8 A b e-11 a B e)(a+b x)^{14}}{14 b^{12}}+$$
$$\frac{2 e^3 (b d-a e)^6(4 b B d+7 A b e-11 a B e)(a+b x)^{15}}{b^{12}}+$$
$$\frac{21 e^4 (b d-a e)^5(5 b B d+6 A b e-11 a B e)(a+b x)^{16}}{8 b^{12}}+$$
$$\frac{42 e^5 (b d-a e)^4(6 b B d+5 A b e-11 a B e)(a+b x)^{17}}{17 b^{12}}+$$
$$\frac{5 e^6 (b d-a e)^3(7 b B d+4 A b e-11 a B e)(a+b x)^{18}}{3 b^{12}}+$$
$$\frac{15 e^7 (b d-a e)^2(8 b B d+3 A b e-11 a B e)(a+b x)^{19}}{19 b^{12}}+$$
$$\frac{e^8 (b d-a e)(9 b B d+2 A b e-11 a B e)(a+b x)^{20}}{4 b^{12}}+$$
$$\frac{e^9 (10 b B d+A b e-11 a B e)(a+b x)^{21}}{21 b^{12}}+\frac{B e^{10}(a+b x)^{22}}{22 b^{12}}$$

Result (type 1, 2815 leaves):

$$a^{10} A d^{10} x+\frac{1}{2} a^9 d^9 (a B d+10 A (b d+a e)) x^2+$$
$$\frac{5}{3} a^8 d^8 \left(2 a B d (b d+a e)+A \left(9 b^2 d^2+20 a b d e+9 a^2 e^2\right)\right) x^3+$$
$$\frac{5}{4} a^7 d^7 \left(a B d \left(9 b^2 d^2+20 a b d e+9 a^2 e^2\right)+6 A \left(4 b^3 d^3+15 a b^2 d^2 e+15 a^2 b d e^2+4 a^3 e^3\right)\right) x^4+$$
$$3 a^6 d^6 \left(2 a B d \left(4 b^3 d^3+15 a b^2 d^2 e+15 a^2 b d e^2+4 a^3 e^3\right)+\right.$$
$$\left.A \left(14 b^4 d^4+80 a b^3 d^3 e+135 a^2 b^2 d^2 e^2+80 a^3 b d e^3+14 a^4 e^4\right)\right) x^5+$$
$$\frac{1}{2} a^5 d^5 \left(5 a B d \left(14 b^4 d^4+80 a b^3 d^3 e+135 a^2 b^2 d^2 e^2+80 a^3 b d e^3+14 a^4 e^4\right)+\right.$$
$$\left.4 A \left(21 b^5 d^5+175 a b^4 d^4 e+450 a^2 b^3 d^3 e^2+450 a^3 b^2 d^2 e^3+175 a^4 b d e^4+21 a^5 e^5\right)\right) x^6+$$
$$\frac{6}{7} a^4 d^4 \left(2 a B d \left(21 b^5 d^5+175 a b^4 d^4 e+450 a^2 b^3 d^3 e^2+450 a^3 b^2 d^2 e^3+175 a^4 b d e^4+21 a^5 e^5\right)+\right.$$
$$\left.5 A \left(7 b^6 d^6+84 a b^5 d^5 e+315 a^2 b^4 d^4 e^2+480 a^3 b^3 d^3 e^3+315 a^4 b^2 d^2 e^4+84 a^5 b d e^5+7 a^6 e^6\right)\right)$$
$$x^7+\frac{15}{4} a^3 d^3 \left(a B d \left(7 b^6 d^6+84 a b^5 d^5 e+315 a^2 b^4 d^4 e^2+480 a^3 b^3 d^3 e^3+\right.\right.$$
$$\left.315 a^4 b^2 d^2 e^4+84 a^5 b d e^5+7 a^6 e^6\right)+A \left(4 b^7 d^7+70 a b^6 d^6 e+378 a^2 b^5 d^5 e^2+\right.$$
$$\left.\left.840 a^3 b^4 d^4 e^3+840 a^4 b^3 d^3 e^4+378 a^5 b^2 d^2 e^5+70 a^6 b d e^6+4 a^7 e^7\right)\right) x^8+$$
$$\frac{5}{3} a^2 d^2 \left(4 a B d \left(2 b^7 d^7+35 a b^6 d^6 e+189 a^2 b^5 d^5 e^2+420 a^3 b^4 d^4 e^3+420 a^4 b^3 d^3 e^4+\right.\right.$$
$$\left.189 a^5 b^2 d^2 e^5+35 a^6 b d e^6+2 a^7 e^7\right)+A \left(3 b^8 d^8+80 a b^7 d^7 e+630 a^2 b^6 d^6 e^2+\right.$$
$$\left.\left.2016 a^3 b^5 d^5 e^3+2940 a^4 b^4 d^4 e^4+2016 a^5 b^3 d^3 e^5+630 a^6 b^2 d^2 e^6+80 a^7 b d e^7+3 a^8 e^8\right)\right) x^9+$$

$$\frac{1}{2} a d \left(3 a B d \left(3 b^8 d^8 + 80 a b^7 d^7 e + 630 a^2 b^6 d^6 e^2 + 2016 a^3 b^5 d^5 e^3 + 2940 a^4 b^4 d^4 e^4 + 2016 a^5 b^3 d^3 e^5 + 630 a^6 b^2 d^2 e^6 + 80 a^7 b d e^7 + 3 a^8 e^8\right) + 2 A \left(b^9 d^9 + 45 a b^8 d^8 e + 540 a^2 b^7 d^7 e^2 + 2520 a^3 b^6 d^6 e^3 + 5292 a^4 b^5 d^5 e^4 + 5292 a^5 b^4 d^4 e^5 + 2520 a^6 b^3 d^3 e^6 + 540 a^7 b^2 d^2 e^7 + 45 a^8 b d e^8 + a^9 e^9\right)\right) x^{10} +$$

$$\frac{1}{11} \left(10 a B d \left(b^9 d^9 + 45 a b^8 d^8 e + 540 a^2 b^7 d^7 e^2 + 2520 a^3 b^6 d^6 e^3 + 5292 a^4 b^5 d^5 e^4 + 5292 a^5 b^4 d^4 e^5 + 2520 a^6 b^3 d^3 e^6 + 540 a^7 b^2 d^2 e^7 + 45 a^8 b d e^8 + a^9 e^9\right) + A \left(b^{10} d^{10} + 100 a b^9 d^9 e + 2025 a^2 b^8 d^8 e^2 + 14400 a^3 b^7 d^7 e^3 + 44100 a^4 b^6 d^6 e^4 + 63504 a^5 b^5 d^5 e^5 + 44100 a^6 b^4 d^4 e^6 + 14400 a^7 b^3 d^3 e^7 + 2025 a^8 b^2 d^2 e^8 + 100 a^9 b d e^9 + a^{10} e^{10}\right)\right) x^{11} +$$

$$\frac{1}{12} \left(a^{10} B e^{10} + 10 a^9 b e^9 (10 B d + A e) + 225 a^8 b^2 d e^8 (9 B d + 2 A e) + 1800 a^7 b^3 d^2 e^7 (8 B d + 3 A e) + 6300 a^6 b^4 d^3 e^6 (7 B d + 4 A e) + 10584 a^5 b^5 d^4 e^5 (6 B d + 5 A e) + 8820 a^4 b^6 d^5 e^4 (5 B d + 6 A e) + 3600 a^3 b^7 d^6 e^3 (4 B d + 7 A e) + 675 a^2 b^8 d^7 e^2 (3 B d + 8 A e) + 50 a b^9 d^8 e (2 B d + 9 A e) + b^{10} d^9 (B d + 10 A e)\right) x^{12} +$$

$$\frac{5}{13} b e \left(2 a^9 B e^9 + 9 a^8 b e^8 (10 B d + A e) + 120 a^7 b^2 d e^7 (9 B d + 2 A e) + 630 a^6 b^3 d^2 e^6 (8 B d + 3 A e) + 1512 a^5 b^4 d^3 e^5 (7 B d + 4 A e) + 1764 a^4 b^5 d^4 e^4 (6 B d + 5 A e) + 1008 a^3 b^6 d^5 e^3 (5 B d + 6 A e) + 270 a^2 b^7 d^6 e^2 (4 B d + 7 A e) + 30 a b^8 d^7 e (3 B d + 8 A e) + b^9 d^8 (2 B d + 9 A e)\right) x^{13} +$$

$$\frac{15}{14} b^2 e^2 \left(3 a^8 B e^8 + 8 a^7 b e^7 (10 B d + A e) + 70 a^6 b^2 d e^6 (9 B d + 2 A e) + 252 a^5 b^3 d^2 e^5 (8 B d + 3 A e) + 420 a^4 b^4 d^3 e^4 (7 B d + 4 A e) + 336 a^3 b^5 d^4 e^3 (6 B d + 5 A e) + 126 a^2 b^6 d^5 e^2 (5 B d + 6 A e) + 20 a b^7 d^6 e (4 B d + 7 A e) + b^8 d^7 (3 B d + 8 A e)\right) x^{14} +$$

$$2 b^3 e^3 \left(4 a^7 B e^7 + 7 a^6 b e^6 (10 B d + A e) + 42 a^5 b^2 d e^5 (9 B d + 2 A e) + 105 a^4 b^3 d^2 e^4 (8 B d + 3 A e) + 120 a^3 b^4 d^3 e^3 (7 B d + 4 A e) + 63 a^2 b^5 d^4 e^2 (6 B d + 5 A e) + 14 a b^6 d^5 e (5 B d + 6 A e) + b^7 d^6 (4 B d + 7 A e)\right) x^{15} + \frac{3}{8} b^4 e^4$$

$$\left(35 a^6 B e^6 + 42 a^5 b e^5 (10 B d + A e) + 175 a^4 b^2 d e^4 (9 B d + 2 A e) + 300 a^3 b^3 d^2 e^3 (8 B d + 3 A e) + 225 a^2 b^4 d^3 e^2 (7 B d + 4 A e) + 70 a b^5 d^4 e (6 B d + 5 A e) + 7 b^6 d^5 (5 B d + 6 A e)\right) x^{16} +$$

$$\frac{3}{17} b^5 e^5 \left(84 a^5 B e^5 + 70 a^4 b e^4 (10 B d + A e) + 200 a^3 b^2 d e^3 (9 B d + 2 A e) + 225 a^2 b^3 d^2 e^2 (8 B d + 3 A e) + 100 a b^4 d^3 e (7 B d + 4 A e) + 14 b^5 d^4 (6 B d + 5 A e)\right) x^{17} +$$

$$\frac{5}{6} b^6 e^6 \left(14 a^4 B e^4 + 8 a^3 b e^3 (10 B d + A e) + 15 a^2 b^2 d e^2 (9 B d + 2 A e) + 10 a b^3 d^2 e (8 B d + 3 A e) + 2 b^4 d^3 (7 B d + 4 A e)\right) x^{18} +$$

$$\frac{5}{19} b^7 e^7 \left(24 a^3 B e^3 + 9 a^2 b e^2 (10 B d + A e) + 10 a b^2 d e (9 B d + 2 A e) + 3 b^3 d^2 (8 B d + 3 A e)\right) x^{19} +$$

$$\frac{1}{4} b^8 e^8 \left(9 a^2 B e^2 + 2 a b e (10 B d + A e) + b^2 d (9 B d + 2 A e)\right) x^{20} +$$

$$\frac{1}{21} b^9 e^9 (10 b B d + A b e + 10 a B e) x^{21} +$$

$$\frac{1}{22} b^{10} B e^{10} x^{22}$$

Problem 1067: Result more than twice size of optimal antiderivative.

$$\int (a+b\,x)^{10}\,(A+B\,x)\,(d+e\,x)^9\,dx$$

Optimal (type 1, 415 leaves, 2 steps):

$$\frac{(A\,b-a\,B)\,(b\,d-a\,e)^9\,(a+b\,x)^{11}}{11\,b^{11}}+\frac{(b\,d-a\,e)^8\,(b\,B\,d+9\,A\,b\,e-10\,a\,B\,e)\,(a+b\,x)^{12}}{12\,b^{11}}+\frac{9\,e\,(b\,d-a\,e)^7\,(b\,B\,d+4\,A\,b\,e-5\,a\,B\,e)\,(a+b\,x)^{13}}{13\,b^{11}}+\frac{6\,e^2\,(b\,d-a\,e)^6\,(3\,b\,B\,d+7\,A\,b\,e-10\,a\,B\,e)\,(a+b\,x)^{14}}{7\,b^{11}}+\frac{14\,e^3\,(b\,d-a\,e)^5\,(2\,b\,B\,d+3\,A\,b\,e-5\,a\,B\,e)\,(a+b\,x)^{15}}{5\,b^{11}}+\frac{63\,e^4\,(b\,d-a\,e)^4\,(b\,B\,d+A\,b\,e-2\,a\,B\,e)\,(a+b\,x)^{16}}{8\,b^{11}}+\frac{42\,e^5\,(b\,d-a\,e)^3\,(3\,b\,B\,d+2\,A\,b\,e-5\,a\,B\,e)\,(a+b\,x)^{17}}{17\,b^{11}}+\frac{2\,e^6\,(b\,d-a\,e)^2\,(7\,b\,B\,d+3\,A\,b\,e-10\,a\,B\,e)\,(a+b\,x)^{18}}{3\,b^{11}}+\frac{9\,e^7\,(b\,d-a\,e)\,(4\,b\,B\,d+A\,b\,e-5\,a\,B\,e)\,(a+b\,x)^{19}}{19\,b^{11}}+\frac{e^8\,(9\,b\,B\,d+A\,b\,e-10\,a\,B\,e)\,(a+b\,x)^{20}}{20\,b^{11}}+\frac{B\,e^9\,(a+b\,x)^{21}}{21\,b^{11}}$$

Result (type 1, 2553 leaves):

$$a^{10}\,A\,d^9\,x+\frac{1}{2}\,a^9\,d^8\,(10\,A\,b\,d+a\,B\,d+9\,a\,A\,e)\,x^2+$$
$$\frac{1}{3}\,a^8\,d^7\,\left(a\,B\,d\,(10\,b\,d+9\,a\,e)+9\,A\,(5\,b^2\,d^2+10\,a\,b\,d\,e+4\,a^2\,e^2)\right)\,x^3+$$
$$\frac{3}{4}\,a^7\,d^6\,\left(3\,a\,B\,d\,(5\,b^2\,d^2+10\,a\,b\,d\,e+4\,a^2\,e^2)+A\,(40\,b^3\,d^3+135\,a\,b^2\,d^2\,e+120\,a^2\,b\,d\,e^2+28\,a^3\,e^3)\right)\,x^4+$$
$$\frac{3}{5}\,a^6\,d^5\,\left(a\,B\,d\,(40\,b^3\,d^3+135\,a\,b^2\,d^2\,e+120\,a^2\,b\,d\,e^2+28\,a^3\,e^3)+A\,(70\,b^4\,d^4+360\,a\,b^3\,d^3\,e+540\,a^2\,b^2\,d^2\,e^2+280\,a^3\,b\,d\,e^3+42\,a^4\,e^4)\right)\,x^5+$$
$$a^5\,d^4\,\left(a\,B\,d\,(35\,b^4\,d^4+180\,a\,b^3\,d^3\,e+270\,a^2\,b^2\,d^2\,e^2+140\,a^3\,b\,d\,e^3+21\,a^4\,e^4)+3\,A\,(14\,b^5\,d^5+105\,a\,b^4\,d^4\,e+240\,a^2\,b^3\,d^3\,e^2+210\,a^3\,b^2\,d^2\,e^3+70\,a^4\,b\,d\,e^4+7\,a^5\,e^5)\right)\,x^6+$$
$$\frac{6}{7}\,a^4\,d^3\,\left(3\,a\,B\,d\,(14\,b^5\,d^5+105\,a\,b^4\,d^4\,e+240\,a^2\,b^3\,d^3\,e^2+210\,a^3\,b^2\,d^2\,e^3+70\,a^4\,b\,d\,e^4+7\,a^5\,e^5)+7\,A\,(5\,b^6\,d^6+54\,a\,b^5\,d^5\,e+180\,a^2\,b^4\,d^4\,e^2+240\,a^3\,b^3\,d^3\,e^3+135\,a^4\,b^2\,d^2\,e^4+30\,a^5\,b\,d\,e^5+2\,a^6\,e^6)\right)$$
$$x^7+\frac{3}{4}\,a^3\,d^2\,\left(7\,a\,B\,d\,(5\,b^6\,d^6+54\,a\,b^5\,d^5\,e+180\,a^2\,b^4\,d^4\,e^2+240\,a^3\,b^3\,d^3\,e^3+135\,a^4\,b^2\,d^2\,e^4+30\,a^5\,b\,d\,e^5+2\,a^6\,e^6)+A\,(20\,b^7\,d^7+315\,a\,b^6\,d^6\,e+1512\,a^2\,b^5\,d^5\,e^2+2940\,a^3\,b^4\,d^4\,e^3+2520\,a^4\,b^3\,d^3\,e^4+945\,a^5\,b^2\,d^2\,e^5+140\,a^6\,b\,d\,e^6+6\,a^7\,e^7)\right)\,x^8+$$
$$\frac{1}{3}\,a^2\,d\,\left(2\,a\,B\,d\,(20\,b^7\,d^7+315\,a\,b^6\,d^6\,e+1512\,a^2\,b^5\,d^5\,e^2+2940\,a^3\,b^4\,d^4\,e^3+2520\,a^4\,b^3\,d^3\,e^4+945\,a^5\,b^2\,d^2\,e^5+140\,a^6\,b\,d\,e^6+6\,a^7\,e^7)+3\,A\,(5\,b^8\,d^8+120\,a\,b^7\,d^7\,e+840\,a^2\,b^6\,d^6\,e^2+\right.$$

$$2352 a^3 b^5 d^5 e^3 + 2940 a^4 b^4 d^4 e^4 + 1680 a^5 b^3 d^3 e^5 + 420 a^6 b^2 d^2 e^6 + 40 a^7 b d e^7 + a^8 e^8)) x^9 +$$

$$\frac{1}{10} a \left(9 a B d \left(5 b^8 d^8 + 120 a b^7 d^7 e + 840 a^2 b^6 d^6 e^2 + 2352 a^3 b^5 d^5 e^3 + 2940 a^4 b^4 d^4 e^4 + 1680 a^5 b^3 d^3 e^5 + 420 a^6 b^2 d^2 e^6 + 40 a^7 b d e^7 + a^8 e^8\right) + A \left(10 b^9 d^9 + 405 a b^8 d^8 e + 4320 a^2 b^7 d^7 e^2 + 17640 a^3 b^6 d^6 e^3 + 31752 a^4 b^5 d^5 e^4 + 26460 a^5 b^4 d^4 e^5 + 10080 a^6 b^3 d^3 e^6 + 1620 a^7 b^2 d^2 e^7 + 90 a^8 b d e^8 + a^9 e^9\right)\right) x^{10} +$$

$$\frac{1}{11} \left(a B \left(10 b^9 d^9 + 405 a b^8 d^8 e + 4320 a^2 b^7 d^7 e^2 + 17640 a^3 b^6 d^6 e^3 + 31752 a^4 b^5 d^5 e^4 + 26460 a^5 b^4 d^4 e^5 + 10080 a^6 b^3 d^3 e^6 + 1620 a^7 b^2 d^2 e^7 + 90 a^8 b d e^8 + a^9 e^9\right) + A b \left(b^9 d^9 + 90 a b^8 d^8 e + 1620 a^2 b^7 d^7 e^2 + 10080 a^3 b^6 d^6 e^3 + 26460 a^4 b^5 d^5 e^4 + 31752 a^5 b^4 d^4 e^5 + 17640 a^6 b^3 d^3 e^6 + 4320 a^7 b^2 d^2 e^7 + 405 a^8 b d e^8 + 10 a^9 e^9\right)\right) x^{11} +$$

$$\frac{1}{12} b \left(10 a^9 B e^9 + 26460 a^4 b^5 d^4 e^4 (B d + A e) + 1080 a^7 b^2 d e^7 (4 B d + A e) + 45 a^8 b e^8 (9 B d + A e) + 10584 a^5 b^4 d^3 e^5 (3 B d + 2 A e) + 5040 a^3 b^6 d^5 e^3 (2 B d + 3 A e) + 2520 a^6 b^3 d^2 e^6 (7 B d + 3 A e) + 90 a b^8 d^7 e (B d + 4 A e) + 540 a^2 b^7 d^6 e^2 (3 B d + 7 A e) + b^9 d^8 (B d + 9 A e)\right) x^{12} +$$

$$\frac{3}{13} b^2 e \left(15 a^8 B e^8 + 5040 a^3 b^5 d^4 e^3 (B d + A e) + 630 a^6 b^2 d e^6 (4 B d + A e) + 40 a^7 b e^7 (9 B d + A e) + 2940 a^4 b^4 d^3 e^4 (3 B d + 2 A e) + 630 a^2 b^6 d^5 e^2 (2 B d + 3 A e) + 1008 a^5 b^3 d^2 e^5 (7 B d + 3 A e) + 3 b^8 d^7 (B d + 4 A e) + 40 a b^7 d^6 e (3 B d + 7 A e)\right) x^{13} +$$

$$\frac{3}{7} b^3 e^2 \left(20 a^7 B e^7 + 945 a^2 b^5 d^4 e^2 (B d + A e) + 378 a^5 b^2 d e^5 (4 B d + A e) + 35 a^6 b e^6 (9 B d + A e) + 840 a^3 b^4 d^3 e^3 (3 B d + 2 A e) + 70 a b^6 d^5 e (2 B d + 3 A e) + 420 a^4 b^3 d^2 e^4 (7 B d + 3 A e) + 2 b^7 d^6 (3 B d + 7 A e)\right) x^{14} +$$

$$\frac{2}{5} b^4 e^3 \left(35 a^6 B e^6 + 210 a b^5 d^4 e (B d + A e) + 315 a^4 b^2 d e^4 (4 B d + A e) + 42 a^5 b e^5 (9 B d + A e) + 315 a^2 b^4 d^3 e^2 (3 B d + 2 A e) + 7 b^6 d^5 (2 B d + 3 A e) + 240 a^3 b^3 d^2 e^3 (7 B d + 3 A e)\right) x^{15} +$$

$$\frac{3}{8} b^5 e^4 \left(42 a^5 B e^5 + 21 b^5 d^4 (B d + A e) + 180 a^3 b^2 d e^3 (4 B d + A e) + 35 a^4 b e^4 (9 B d + A e) + 70 a b^4 d^3 e (3 B d + 2 A e) + 90 a^2 b^3 d^2 e^2 (7 B d + 3 A e)\right) x^{16} +$$

$$\frac{3}{17} b^6 e^5 \left(70 a^4 B e^4 + 135 a^2 b^2 d e^2 (4 B d + A e) + 40 a^3 b e^3 (9 B d + A e) + 14 b^4 d^3 (3 B d + 2 A e) + 40 a b^3 d^2 e (7 B d + 3 A e)\right) x^{17} +$$

$$\frac{1}{6} b^7 e^6 \left(40 a^3 B e^3 + 30 a b^2 d e (4 B d + A e) + 15 a^2 b e^2 (9 B d + A e) + 4 b^3 d^2 (7 B d + 3 A e)\right) x^{18} +$$

$$\frac{1}{19} b^8 e^7 \left(45 a^2 B e^2 + 9 b^2 d (4 B d + A e) + 10 a b e (9 B d + A e)\right) x^{19} +$$

$$\frac{1}{20} b^9 e^8 (9 b B d + A b e + 10 a B e) x^{20} +$$

$$\frac{1}{21} b^{10} B e^9 x^{21}$$

Problem 1068: Result more than twice size of optimal antiderivative.

$$\int (a + b x)^{10} (A + B x) (d + e x)^8 \, dx$$

Optimal (type 1, 372 leaves, 2 steps):

$$\frac{(A b - a B)\,(b d - a e)^8\,(a + b x)^{11}}{11\,b^{10}} + \frac{(b d - a e)^7\,(b B d + 8 A b e - 9 a B e)\,(a + b x)^{12}}{12\,b^{10}} +$$
$$\frac{4 e\,(b d - a e)^6\,(2 b B d + 7 A b e - 9 a B e)\,(a + b x)^{13}}{13\,b^{10}} +$$
$$\frac{2 e^2\,(b d - a e)^5\,(b B d + 2 A b e - 3 a B e)\,(a + b x)^{14}}{b^{10}} +$$
$$\frac{14 e^3\,(b d - a e)^4\,(4 b B d + 5 A b e - 9 a B e)\,(a + b x)^{15}}{15\,b^{10}} +$$
$$\frac{7 e^4\,(b d - a e)^3\,(5 b B d + 4 A b e - 9 a B e)\,(a + b x)^{16}}{8\,b^{10}} +$$
$$\frac{28 e^5\,(b d - a e)^2\,(2 b B d + A b e - 3 a B e)\,(a + b x)^{17}}{17\,b^{10}} +$$
$$\frac{2 e^6\,(b d - a e)\,(7 b B d + 2 A b e - 9 a B e)\,(a + b x)^{18}}{9\,b^{10}} +$$
$$\frac{e^7\,(8 b B d + A b e - 9 a B e)\,(a + b x)^{19}}{19\,b^{10}} + \frac{B e^8\,(a + b x)^{20}}{20\,b^{10}}$$

Result (type 1, 2307 leaves) :

$$a^{10} A d^8 x + \frac{1}{2} a^9 d^7 (10 A b d + a B d + 8 a A e) x^2 +$$
$$\frac{1}{3} a^8 d^6 \left(2 a B d (5 b d + 4 a e) + A (45 b^2 d^2 + 80 a b d e + 28 a^2 e^2)\right) x^3 +$$
$$\frac{1}{4} a^7 d^5 \left(a B d (45 b^2 d^2 + 80 a b d e + 28 a^2 e^2) + 8 A (15 b^3 d^3 + 45 a b^2 d^2 e + 35 a^2 b d e^2 + 7 a^3 e^3)\right) x^4 +$$
$$\frac{2}{5} a^6 d^4 \left(4 a B d (15 b^3 d^3 + 45 a b^2 d^2 e + 35 a^2 b d e^2 + 7 a^3 e^3) + \right.$$
$$\left. 5 A (21 b^4 d^4 + 96 a b^3 d^3 e + 126 a^2 b^2 d^2 e^2 + 56 a^3 b d e^3 + 7 a^4 e^4)\right) x^5 +$$
$$\frac{1}{3} a^5 d^3 \left(5 a B d (21 b^4 d^4 + 96 a b^3 d^3 e + 126 a^2 b^2 d^2 e^2 + 56 a^3 b d e^3 + 7 a^4 e^4) + \right.$$
$$\left. 14 A (9 b^5 d^5 + 60 a b^4 d^4 e + 120 a^2 b^3 d^3 e^2 + 90 a^3 b^2 d^2 e^3 + 25 a^4 b d e^4 + 2 a^5 e^5)\right) x^6 +$$
$$2 a^4 d^2 \left(2 a B d (9 b^5 d^5 + 60 a b^4 d^4 e + 120 a^2 b^3 d^3 e^2 + 90 a^3 b^2 d^2 e^3 + 25 a^4 b d e^4 + 2 a^5 e^5) + \right.$$
$$\left. A (15 b^6 d^6 + 144 a b^5 d^5 e + 420 a^2 b^4 d^4 e^2 + 480 a^3 b^3 d^3 e^3 + 225 a^4 b^2 d^2 e^4 + 40 a^5 b d e^5 + 2 a^6 e^6)\right)$$
$$x^7 + \frac{1}{4} a^3 d \left(7 a B d (15 b^6 d^6 + 144 a b^5 d^5 e + 420 a^2 b^4 d^4 e^2 + 480 a^3 b^3 d^3 e^3 + \right.$$
$$225 a^4 b^2 d^2 e^4 + 40 a^5 b d e^5 + 2 a^6 e^6) + 4 A (15 b^7 d^7 + 210 a b^6 d^6 e + 882 a^2 b^5 d^5 e^2 +$$
$$\left. 1470 a^3 b^4 d^4 e^3 + 1050 a^4 b^3 d^3 e^4 + 315 a^5 b^2 d^2 e^5 + 35 a^6 b d e^6 + a^7 e^7)\right) x^8 +$$
$$\frac{1}{9} a^2 \left(8 a B d (15 b^7 d^7 + 210 a b^6 d^6 e + 882 a^2 b^5 d^5 e^2 + 1470 a^3 b^4 d^4 e^3 + 1050 a^4 b^3 d^3 e^4 + \right.$$
$$315 a^5 b^2 d^2 e^5 + 35 a^6 b d e^6 + a^7 e^7) + A (45 b^8 d^8 + 960 a b^7 d^7 e + 5880 a^2 b^6 d^6 e^2 +$$
$$\left. 14\,112 a^3 b^5 d^5 e^3 + 14\,700 a^4 b^4 d^4 e^4 + 6720 a^5 b^3 d^3 e^5 + 1260 a^6 b^2 d^2 e^6 + 80 a^7 b d e^7 + a^8 e^8)\right)$$
$$x^9 + \frac{1}{10} a \left(10 A b (b^8 d^8 + 36 a b^7 d^7 e + 336 a^2 b^6 d^6 e^2 + 1176 a^3 b^5 d^5 e^3 + 1764 a^4 b^4 d^4 e^4 + \right.$$
$$1176 a^5 b^3 d^3 e^5 + 336 a^6 b^2 d^2 e^6 + 36 a^7 b d e^7 + a^8 e^8) +$$
$$a B (45 b^8 d^8 + 960 a b^7 d^7 e + 5880 a^2 b^6 d^6 e^2 + 14\,112 a^3 b^5 d^5 e^3 + 14\,700 a^4 b^4 d^4 e^4 +$$

$$6720\,a^5\,b^3\,d^3\,e^5+1260\,a^6\,b^2\,d^2\,e^6+80\,a^7\,b\,d\,e^7+a^8\,e^8\big)\Big)\,x^{10}+$$

$$\frac{1}{11}\,b\,\Big(10\,a\,B\,\big(b^8\,d^8+36\,a\,b^7\,d^7\,e+336\,a^2\,b^6\,d^6\,e^2+1176\,a^3\,b^5\,d^5\,e^3+1764\,a^4\,b^4\,d^4\,e^4+1176\,a^5\,b^3\,d^3\,e^5+336\,a^6\,b^2\,d^2\,e^6+36\,a^7\,b\,d\,e^7+a^8\,e^8\big)+A\,b\,\big(b^8\,d^8+80\,a\,b^7\,d^7\,e+1260\,a^2\,b^6\,d^6\,e^2+6720\,a^3\,b^5\,d^5\,e^3+14\,700\,a^4\,b^4\,d^4\,e^4+14\,112\,a^5\,b^3\,d^3\,e^5+5880\,a^6\,b^2\,d^2\,e^6+960\,a^7\,b\,d\,e^7+45\,a^8\,e^8\big)\Big)\,x^{11}+$$

$$\frac{1}{12}\,b^2\,\big(45\,a^8\,B\,e^8+7056\,a^5\,b^3\,d^2\,e^5\,(2\,B\,d+A\,e)+120\,a^7\,b\,e^7\,(8\,B\,d+A\,e)+1260\,a^2\,b^6\,d^5\,e^2\,(B\,d+2\,A\,e)+840\,a^6\,b^2\,d\,e^6\,(7\,B\,d+2\,A\,e)+2940\,a^4\,b^4\,d^3\,e^4\,(5\,B\,d+4\,A\,e)+1680\,a^3\,b^5\,d^4\,e^3\,(4\,B\,d+5\,A\,e)+40\,a\,b^7\,d^6\,e\,(2\,B\,d+7\,A\,e)+b^8\,d^7\,(B\,d+8\,A\,e)\big)\,x^{12}+$$

$$\frac{2}{13}\,b^3\,e\,\big(60\,a^7\,B\,e^7+2940\,a^4\,b^3\,d^2\,e^4\,(2\,B\,d+A\,e)+105\,a^6\,b\,e^6\,(8\,B\,d+A\,e)+140\,a\,b^6\,d^5\,e\,(B\,d+2\,A\,e)+504\,a^5\,b^2\,d\,e^5\,(7\,B\,d+2\,A\,e)+840\,a^3\,b^4\,d^3\,e^3\,(5\,B\,d+4\,A\,e)+315\,a^2\,b^5\,d^4\,e^2\,(4\,B\,d+5\,A\,e)+2\,b^7\,d^6\,(2\,B\,d+7\,A\,e)\big)\,x^{13}+$$

$$b^4\,e^2\,\big(15\,a^6\,B\,e^6+240\,a^3\,b^3\,d^2\,e^3\,(2\,B\,d+A\,e)+18\,a^5\,b\,e^5\,(8\,B\,d+A\,e)+2\,b^6\,d^5\,(B\,d+2\,A\,e)+60\,a^4\,b^2\,d\,e^4\,(7\,B\,d+2\,A\,e)+45\,a^2\,b^4\,d^3\,e^2\,(5\,B\,d+4\,A\,e)+10\,a\,b^5\,d^4\,e\,(4\,B\,d+5\,A\,e)\big)\,x^{14}+$$

$$\frac{2}{15}\,b^5\,e^3\,\big(126\,a^5\,B\,e^5+630\,a^2\,b^3\,d^2\,e^2\,(2\,B\,d+A\,e)+105\,a^4\,b\,e^4\,(8\,B\,d+A\,e)+240\,a^3\,b^2\,d\,e^3\,(7\,B\,d+2\,A\,e)+70\,a\,b^4\,d^3\,e\,(5\,B\,d+4\,A\,e)+7\,b^5\,d^4\,(4\,B\,d+5\,A\,e)\big)\,x^{15}+$$

$$\frac{1}{8}\,b^6\,e^4\,\big(105\,a^4\,B\,e^4+140\,a\,b^3\,d^2\,e\,(2\,B\,d+A\,e)+60\,a^3\,b\,e^3\,(8\,B\,d+A\,e)+90\,a^2\,b^2\,d\,e^2\,(7\,B\,d+2\,A\,e)+7\,b^4\,d^3\,(5\,B\,d+4\,A\,e)\big)\,x^{16}+$$

$$\frac{1}{17}\,b^7\,e^5\,\big(120\,a^3\,B\,e^3+28\,b^3\,d^2\,(2\,B\,d+A\,e)+45\,a^2\,b\,e^2\,(8\,B\,d+A\,e)+40\,a\,b^2\,d\,e\,(7\,B\,d+2\,A\,e)\big)\,x^{17}+$$

$$\frac{1}{18}\,b^8\,e^6\,\big(45\,a^2\,B\,e^2+10\,a\,b\,e\,(8\,B\,d+A\,e)+4\,b^2\,d\,(7\,B\,d+2\,A\,e)\big)\,x^{18}+$$

$$\frac{1}{19}\,b^9\,e^7\,(8\,b\,B\,d+A\,b\,e+10\,a\,B\,e)\,x^{19}+$$

$$\frac{1}{20}\,b^{10}\,B\,e^8\,x^{20}$$

Problem 1069: Result more than twice size of optimal antiderivative.

$$\int (a+b\,x)^{10}\,(A+B\,x)\,(d+e\,x)^7\,dx$$

Optimal (type 1, 329 leaves, 2 steps):

$$\frac{(A b-a B)(b d-a e)^7(a+b x)^{11}}{11 b^9}+\frac{(b d-a e)^6(b B d+7 A b e-8 a B e)(a+b x)^{12}}{12 b^9}+$$
$$\frac{7 e (b d-a e)^5(b B d+3 A b e-4 a B e)(a+b x)^{13}}{13 b^9}+$$
$$\frac{e^2(b d-a e)^4(3 b B d+5 A b e-8 a B e)(a+b x)^{14}}{2 b^9}+$$
$$\frac{7 e^3(b d-a e)^3(b B d+A b e-2 a B e)(a+b x)^{15}}{3 b^9}+$$
$$\frac{7 e^4(b d-a e)^2(5 b B d+3 A b e-8 a B e)(a+b x)^{16}}{16 b^9}+$$
$$\frac{7 e^5(b d-a e)(3 b B d+A b e-4 a B e)(a+b x)^{17}}{17 b^9}+$$
$$\frac{e^6(7 b B d+A b e-8 a B e)(a+b x)^{18}}{18 b^9}+\frac{B e^7(a+b x)^{19}}{19 b^9}$$

Result (type 1, 2034 leaves):

$$a^{10} A d^7 x+\frac{1}{2} a^9 d^6 (10 A b d+a B d+7 a A e) x^2+$$
$$\frac{1}{3} a^8 d^5 \left(a B d (10 b d+7 a e)+A \left(45 b^2 d^2+70 a b d e+21 a^2 e^2\right)\right) x^3+$$
$$\frac{1}{4} a^7 d^4 \left(a B d \left(45 b^2 d^2+70 a b d e+21 a^2 e^2\right)+5 A \left(24 b^3 d^3+63 a b^2 d^2 e+42 a^2 b d e^2+7 a^3 e^3\right)\right) x^4+$$
$$a^6 d^3 \left(a B d \left(24 b^3 d^3+63 a b^2 d^2 e+42 a^2 b d e^2+7 a^3 e^3\right)+\right.$$
$$\left.7 A \left(6 b^4 d^4+24 a b^3 d^3 e+27 a^2 b^2 d^2 e^2+10 a^3 b d e^3+a^4 e^4\right)\right) x^5+$$
$$\frac{7}{6} a^5 d^2 \left(5 a B d \left(6 b^4 d^4+24 a b^3 d^3 e+27 a^2 b^2 d^2 e^2+10 a^3 b d e^3+a^4 e^4\right)+\right.$$
$$\left.A \left(36 b^5 d^5+210 a b^4 d^4 e+360 a^2 b^3 d^3 e^2+225 a^3 b^2 d^2 e^3+50 a^4 b d e^4+3 a^5 e^5\right)\right) x^6+$$
$$a^4 d \left(a B d \left(36 b^5 d^5+210 a b^4 d^4 e+360 a^2 b^3 d^3 e^2+225 a^3 b^2 d^2 e^3+50 a^4 b d e^4+3 a^5 e^5\right)+\right.$$
$$\left.A \left(30 b^6 d^6+252 a b^5 d^5 e+630 a^2 b^4 d^4 e^2+600 a^3 b^3 d^3 e^3+225 a^4 b^2 d^2 e^4+30 a^5 b d e^5+a^6 e^6\right)\right) x^7+$$
$$\frac{1}{8} a^3 \left(7 a B d \left(30 b^6 d^6+252 a b^5 d^5 e+630 a^2 b^4 d^4 e^2+600 a^3 b^3 d^3 e^3+225 a^4 b^2 d^2 e^4+\right.\right.$$
$$\left.30 a^5 b d e^5+a^6 e^6\right)+A \left(120 b^7 d^7+1470 a b^6 d^6 e+5292 a^2 b^5 d^5 e^2+\right.$$
$$\left.\left.7350 a^3 b^4 d^4 e^3+4200 a^4 b^3 d^3 e^4+945 a^5 b^2 d^2 e^5+70 a^6 b d e^6+a^7 e^7\right)\right) x^8+$$
$$\frac{1}{9} a^2 \left(a B \left(120 b^7 d^7+1470 a b^6 d^6 e+5292 a^2 b^5 d^5 e^2+7350 a^3 b^4 d^4 e^3+4200 a^4 b^3 d^3 e^4+\right.\right.$$
$$\left.945 a^5 b^2 d^2 e^5+70 a^6 b d e^6+a^7 e^7\right)+5 A b \left(9 b^7 d^7+168 a b^6 d^6 e+882 a^2 b^5 d^5 e^2+\right.$$
$$\left.\left.1764 a^3 b^4 d^4 e^3+1470 a^4 b^3 d^3 e^4+504 a^5 b^2 d^2 e^5+63 a^6 b d e^6+2 a^7 e^7\right)\right) x^9+$$
$$\frac{1}{2} a b \left(a B \left(9 b^7 d^7+168 a b^6 d^6 e+882 a^2 b^5 d^5 e^2+1764 a^3 b^4 d^4 e^3+1470 a^4 b^3 d^3 e^4+\right.\right.$$
$$\left.504 a^5 b^2 d^2 e^5+63 a^6 b d e^6+2 a^7 e^7\right)+A b \left(2 b^7 d^7+63 a b^6 d^6 e+504 a^2 b^5 d^5 e^2+\right.$$
$$\left.\left.1470 a^3 b^4 d^4 e^3+1764 a^4 b^3 d^3 e^4+882 a^5 b^2 d^2 e^5+168 a^6 b d e^6+9 a^7 e^7\right)\right) x^{10}+$$
$$\frac{1}{11} b^2 \left(5 a B \left(2 b^7 d^7+63 a b^6 d^6 e+504 a^2 b^5 d^5 e^2+1470 a^3 b^4 d^4 e^3+1764 a^4 b^3 d^3 e^4+\right.\right.$$
$$\left.882 a^5 b^2 d^2 e^5+168 a^6 b d e^6+9 a^7 e^7\right)+A b \left(b^7 d^7+70 a b^6 d^6 e+945 a^2 b^5 d^5 e^2+\right.$$
$$\left.\left.4200 a^3 b^4 d^4 e^3+7350 a^4 b^3 d^3 e^4+5292 a^5 b^2 d^2 e^5+1470 a^6 b d e^6+120 a^7 e^7\right)\right) x^{11}+$$

$$\frac{1}{12} b^3 \left(120 a^7 B e^7 + 4200 a^3 b^4 d^3 e^3 (B d + A e) + 1764 a^5 b^2 d e^5 (3 B d + A e) + 210 a^6 b e^6 (7 B d + A e) + 70 a b^6 d^5 e (B d + 3 A e) + 1470 a^4 b^3 d^2 e^4 (5 B d + 3 A e) + 315 a^2 b^5 d^4 e^2 (3 B d + 5 A e) + b^7 d^6 (B d + 7 A e)\right) x^{12} +$$

$$\frac{7}{13} b^4 e \left(30 a^6 B e^6 + 225 a^2 b^4 d^3 e^2 (B d + A e) + 210 a^4 b^2 d e^4 (3 B d + A e) + 36 a^5 b e^5 (7 B d + A e) + b^6 d^5 (B d + 3 A e) + 120 a^3 b^3 d^2 e^3 (5 B d + 3 A e) + 10 a b^5 d^4 e (3 B d + 5 A e)\right) x^{13} +$$

$$\frac{1}{2} b^5 e^2 \left(36 a^5 B e^5 + 50 a b^4 d^3 e (B d + A e) + 120 a^3 b^2 d e^3 (3 B d + A e) + 30 a^4 b e^4 (7 B d + A e) + 45 a^2 b^3 d^2 e^2 (5 B d + 3 A e) + b^5 d^4 (3 B d + 5 A e)\right) x^{14} +$$

$$\frac{1}{3} b^6 e^3 \left(42 a^4 B e^4 + 7 b^4 d^3 (B d + A e) + 63 a^2 b^2 d e^2 (3 B d + A e) + 24 a^3 b e^3 (7 B d + A e) + 14 a b^3 d^2 e (5 B d + 3 A e)\right) x^{15} +$$

$$\frac{1}{16} b^7 e^4 \left(120 a^3 B e^3 + 70 a b^2 d e (3 B d + A e) + 45 a^2 b e^2 (7 B d + A e) + 7 b^3 d^2 (5 B d + 3 A e)\right) x^{16} +$$

$$\frac{1}{17} b^8 e^5 \left(45 a^2 B e^2 + 7 b^2 d (3 B d + A e) + 10 a b e (7 B d + A e)\right) x^{17} +$$

$$\frac{1}{18} b^9 e^6 (7 b B d + A b e + 10 a B e) x^{18} +$$

$$\frac{1}{19} b^{10} B e^7 x^{19}$$

Problem 1070: Result more than twice size of optimal antiderivative.

$$\int (a + b x)^{10} (A + B x) (d + e x)^6 \, dx$$

Optimal (type 1, 290 leaves, 2 steps):

$$\frac{(A b - a B) (b d - a e)^6 (a + b x)^{11}}{11 b^8} + \frac{(b d - a e)^5 (b B d + 6 A b e - 7 a B e) (a + b x)^{12}}{12 b^8} + \frac{3 e (b d - a e)^4 (2 b B d + 5 A b e - 7 a B e) (a + b x)^{13}}{13 b^8} + \frac{5 e^2 (b d - a e)^3 (3 b B d + 4 A b e - 7 a B e) (a + b x)^{14}}{14 b^8} + \frac{e^3 (b d - a e)^2 (4 b B d + 3 A b e - 7 a B e) (a + b x)^{15}}{3 b^8} + \frac{3 e^4 (b d - a e) (5 b B d + 2 A b e - 7 a B e) (a + b x)^{16}}{16 b^8} + \frac{e^5 (6 b B d + A b e - 7 a B e) (a + b x)^{17}}{17 b^8} + \frac{B e^6 (a + b x)^{18}}{18 b^8}$$

Result (type 1, 1788 leaves):

$$a^{10} A d^6 x + \frac{1}{2} a^9 d^5 \left(10 A b d + a B d + 6 a A e\right) x^2 +$$
$$\frac{1}{3} a^8 d^4 \left(2 a B d \left(5 b d + 3 a e\right) + 15 A \left(3 b^2 d^2 + 4 a b d e + a^2 e^2\right)\right) x^3 +$$
$$\frac{5}{4} a^7 d^3 \left(3 a B d \left(3 b^2 d^2 + 4 a b d e + a^2 e^2\right) + A \left(24 b^3 d^3 + 54 a b^2 d^2 e + 30 a^2 b d e^2 + 4 a^3 e^3\right)\right) x^4 +$$
$$a^6 d^2 \left(2 a B d \left(12 b^3 d^3 + 27 a b^2 d^2 e + 15 a^2 b d e^2 + 2 a^3 e^3\right) + A \left(42 b^4 d^4 + 144 a b^3 d^3 e + 135 a^2 b^2 d^2 e^2 + 40 a^3 b d e^3 + 3 a^4 e^4\right)\right) x^5 +$$
$$\frac{1}{6} a^5 d \left(5 a B d \left(42 b^4 d^4 + 144 a b^3 d^3 e + 135 a^2 b^2 d^2 e^2 + 40 a^3 b d e^3 + 3 a^4 e^4\right) + 6 A \left(42 b^5 d^5 + 210 a b^4 d^4 e + 300 a^2 b^3 d^3 e^2 + 150 a^3 b^2 d^2 e^3 + 25 a^4 b d e^4 + a^5 e^5\right)\right) x^6 + \frac{1}{7} a^4$$
$$\left(6 a B d \left(42 b^5 d^5 + 210 a b^4 d^4 e + 300 a^2 b^3 d^3 e^2 + 150 a^3 b^2 d^2 e^3 + 25 a^4 b d e^4 + a^5 e^5\right) + A \left(210 b^6 d^6 + 1512 a b^5 d^5 e + 3150 a^2 b^4 d^4 e^2 + 2400 a^3 b^3 d^3 e^3 + 675 a^4 b^2 d^2 e^4 + 60 a^5 b d e^5 + a^6 e^6\right)\right) x^7 + \frac{1}{8} a^3$$
$$\left(10 A b \left(12 b^6 d^6 + 126 a b^5 d^5 e + 378 a^2 b^4 d^4 e^2 + 420 a^3 b^3 d^3 e^3 + 180 a^4 b^2 d^2 e^4 + 27 a^5 b d e^5 + a^6 e^6\right) + a B \left(210 b^6 d^6 + 1512 a b^5 d^5 e + 3150 a^2 b^4 d^4 e^2 + 2400 a^3 b^3 d^3 e^3 + 675 a^4 b^2 d^2 e^4 + 60 a^5 b d e^5 + a^6 e^6\right)\right) x^8 + \frac{5}{9} a^2 b$$
$$\left(9 A b \left(b^6 d^6 + 16 a b^5 d^5 e + 70 a^2 b^4 d^4 e^2 + 112 a^3 b^3 d^3 e^3 + 70 a^4 b^2 d^2 e^4 + 16 a^5 b d e^5 + a^6 e^6\right) + 2 a B \left(12 b^6 d^6 + 126 a b^5 d^5 e + 378 a^2 b^4 d^4 e^2 + 420 a^3 b^3 d^3 e^3 + 180 a^4 b^2 d^2 e^4 + 27 a^5 b d e^5 + a^6 e^6\right)\right) x^9 +$$
$$\frac{1}{2} a b^2 \left(9 a B \left(b^6 d^6 + 16 a b^5 d^5 e + 70 a^2 b^4 d^4 e^2 + 112 a^3 b^3 d^3 e^3 + 70 a^4 b^2 d^2 e^4 + 16 a^5 b d e^5 + a^6 e^6\right) + 2 A b \left(b^6 d^6 + 27 a b^5 d^5 e + 180 a^2 b^4 d^4 e^2 + 420 a^3 b^3 d^3 e^3 + 378 a^4 b^2 d^2 e^4 + 126 a^5 b d e^5 + 12 a^6 e^6\right)\right)$$
$$x^{10} + \frac{1}{11} b^3 \left(10 a B \left(b^6 d^6 + 27 a b^5 d^5 e + 180 a^2 b^4 d^4 e^2 + 420 a^3 b^3 d^3 e^3 + 378 a^4 b^2 d^2 e^4 + 126 a^5 b d e^5 + 12 a^6 e^6\right) + A b \left(b^6 d^6 + 60 a b^5 d^5 e + 675 a^2 b^4 d^4 e^2 + 2400 a^3 b^3 d^3 e^3 + 3150 a^4 b^2 d^2 e^4 + 1512 a^5 b d e^5 + 210 a^6 e^6\right)\right) x^{11} + \frac{1}{12} b^4$$
$$\left(210 a^6 B e^6 + 252 a^5 b e^5 \left(6 B d + A e\right) + 630 a^4 b^2 d e^4 \left(5 B d + 2 A e\right) + 600 a^3 b^3 d^2 e^3 \left(4 B d + 3 A e\right) + 225 a^2 b^4 d^3 e^2 \left(3 B d + 4 A e\right) + 30 a b^5 d^4 e \left(2 B d + 5 A e\right) + b^6 d^5 \left(B d + 6 A e\right)\right) x^{12} +$$
$$\frac{1}{13} b^5 e \left(252 a^5 B e^5 + 210 a^4 b e^4 \left(6 B d + A e\right) + 360 a^3 b^2 d e^3 \left(5 B d + 2 A e\right) + 225 a^2 b^3 d^2 e^2 \left(4 B d + 3 A e\right) + 50 a b^4 d^3 e \left(3 B d + 4 A e\right) + 3 b^5 d^4 \left(2 B d + 5 A e\right)\right) x^{13} +$$
$$\frac{5}{14} b^6 e^2 \left(42 a^4 B e^4 + 24 a^3 b e^3 \left(6 B d + A e\right) + 27 a^2 b^2 d e^2 \left(5 B d + 2 A e\right) + 10 a b^3 d^2 e \left(4 B d + 3 A e\right) + b^4 d^3 \left(3 B d + 4 A e\right)\right) x^{14} +$$
$$\frac{1}{3} b^7 e^3 \left(24 a^3 B e^3 + 9 a^2 b e^2 \left(6 B d + A e\right) + 6 a b^2 d e \left(5 B d + 2 A e\right) + b^3 d^2 \left(4 B d + 3 A e\right)\right) x^{15} +$$
$$\frac{1}{16} b^8 e^4 \left(45 a^2 B e^2 + 10 a b e \left(6 B d + A e\right) + 3 b^2 d \left(5 B d + 2 A e\right)\right) x^{16} +$$
$$\frac{1}{17} b^9 e^5 \left(6 b B d + A b e + 10 a B e\right) x^{17} +$$
$$\frac{1}{18} b^{10} B e^6 x^{18}$$

Problem 1071: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^{10} (A+B x) (d+e x)^5 \, dx$$

Optimal (type 1, 243 leaves, 2 steps):

$$\frac{(A b-a B) (b d-a e)^5 (a+b x)^{11}}{11 b^7}+\frac{(b d-a e)^4 (b B d+5 A b e-6 a B e) (a+b x)^{12}}{12 b^7}+$$
$$\frac{5 e (b d-a e)^3 (b B d+2 A b e-3 a B e) (a+b x)^{13}}{13 b^7}+$$
$$\frac{5 e^2 (b d-a e)^2 (b B d+A b e-2 a B e) (a+b x)^{14}}{7 b^7}+\frac{e^3 (b d-a e) (2 b B d+A b e-3 a B e) (a+b x)^{15}}{3 b^7}+$$
$$\frac{e^4 (5 b B d+A b e-6 a B e) (a+b x)^{16}}{16 b^7}+\frac{B e^5 (a+b x)^{17}}{17 b^7}$$

Result (type 1, 1509 leaves):

$$a^{10} A d^5 x+\frac{1}{2} a^9 d^4 \left(a B d+5 A \left(2 b d+a e\right)\right) x^2+\frac{5}{3} a^8 d^3 \left(a B d \left(2 b d+a e\right)+A \left(9 b^2 d^2+10 a b d e+2 a^2 e^2\right)\right) x^3+\frac{5}{4} a^7 d^2 \left(a B d \left(9 b^2 d^2+10 a b d e+2 a^2 e^2\right)+A \left(24 b^3 d^3+45 a b^2 d^2 e+20 a^2 b d e^2+2 a^3 e^3\right)\right) x^4+a^6 d \left(a B d \left(24 b^3 d^3+45 a b^2 d^2 e+20 a^2 b d e^2+2 a^3 e^3\right)+A \left(42 b^4 d^4+120 a b^3 d^3 e+90 a^2 b^2 d^2 e^2+20 a^3 b d e^3+a^4 e^4\right)\right) x^5+\frac{1}{6} a^5 \left(5 a B d \left(42 b^4 d^4+120 a b^3 d^3 e+90 a^2 b^2 d^2 e^2+20 a^3 b d e^3+a^4 e^4\right)+A \left(252 b^5 d^5+1050 a b^4 d^4 e+1200 a^2 b^3 d^3 e^2+450 a^3 b^2 d^2 e^3+50 a^4 b d e^4+a^5 e^5\right)\right) x^6+\frac{1}{7} a^4 \left(a B \left(252 b^5 d^5+1050 a b^4 d^4 e+1200 a^2 b^3 d^3 e^2+450 a^3 b^2 d^2 e^3+50 a^4 b d e^4+a^5 e^5\right)+5 A b \left(42 b^5 d^5+252 a b^4 d^4 e+420 a^2 b^3 d^3 e^2+240 a^3 b^2 d^2 e^3+45 a^4 b d e^4+2 a^5 e^5\right)\right) x^7+\frac{5}{8} a^3 b \left(a B \left(42 b^5 d^5+252 a b^4 d^4 e+420 a^2 b^3 d^3 e^2+240 a^3 b^2 d^2 e^3+45 a^4 b d e^4+2 a^5 e^5\right)+3 A b \left(8 b^5 d^5+70 a b^4 d^4 e+168 a^2 b^3 d^3 e^2+140 a^3 b^2 d^2 e^3+40 a^4 b d e^4+3 a^5 e^5\right)\right) x^8+\frac{5}{3} a^2 b^2 \left(a B \left(8 b^5 d^5+70 a b^4 d^4 e+168 a^2 b^3 d^3 e^2+140 a^3 b^2 d^2 e^3+40 a^4 b d e^4+3 a^5 e^5\right)+A b \left(3 b^5 d^5+40 a b^4 d^4 e+140 a^2 b^3 d^3 e^2+168 a^3 b^2 d^2 e^3+70 a^4 b d e^4+8 a^5 e^5\right)\right) x^9+\frac{1}{2} a b^3 \left(3 a B \left(3 b^5 d^5+40 a b^4 d^4 e+140 a^2 b^3 d^3 e^2+168 a^3 b^2 d^2 e^3+70 a^4 b d e^4+8 a^5 e^5\right)+A b \left(2 b^5 d^5+45 a b^4 d^4 e+240 a^2 b^3 d^3 e^2+420 a^3 b^2 d^2 e^3+252 a^4 b d e^4+42 a^5 e^5\right)\right) x^{10}+\frac{1}{11} b^4 \left(5 a B \left(2 b^5 d^5+45 a b^4 d^4 e+240 a^2 b^3 d^3 e^2+420 a^3 b^2 d^2 e^3+252 a^4 b d e^4+42 a^5 e^5\right)+A b \left(b^5 d^5+50 a b^4 d^4 e+450 a^2 b^3 d^3 e^2+1200 a^3 b^2 d^2 e^3+1050 a^4 b d e^4+252 a^5 e^5\right)\right) x^{11}+\frac{1}{12} b^5 \left(252 a^5 B e^5+450 a^2 b^3 d^2 e^2 \left(B d+A e\right)+600 a^3 b^2 d e^3 \left(2 B d+A e\right)+210 a^4 b e^4 \left(5 B d+A e\right)+50 a b^4 d^3 e \left(B d+2 A e\right)+b^5 d^4 \left(B d+5 A e\right)\right) x^{12}+\frac{5}{13} b^6 e \left(42 a^4 B e^4+20 a b^3 d^2 e \left(B d+A e\right)+45 a^2 b^2 d e^2 \left(2 B d+A e\right)+24 a^3 b e^3 \left(5 B d+A e\right)+b^4 d^3 \left(B d+2 A e\right)\right) x^{13}+\frac{5}{14} b^7 e^2 \left(24 a^3 B e^3+2 b^3 d^2 \left(B d+A e\right)+10 a b^2 d e \left(2 B d+A e\right)+9 a^2 b e^2 \left(5 B d+A e\right)\right) x^{14}+\frac{1}{3} b^8 e^3 \left(9 a^2 B e^2+b^2 d \left(2 B d+A e\right)+2 a b e \left(5 B d+A e\right)\right) x^{15}+\frac{1}{16} b^9 e^4 \left(5 b B d+A b e+10 a B e\right) x^{16}+\frac{1}{17} b^{10} B e^5 x^{17}$$

Problem 1072: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^{10} (A+B x) (d+e x)^4 \, dx$$

Optimal (type 1, 204 leaves, 2 steps):

$$\frac{(A b-a B)(b d-a e)^4 (a+b x)^{11}}{11 b^6}+\frac{(b d-a e)^3 (b B d+4 A b e-5 a B e)(a+b x)^{12}}{12 b^6}+$$
$$\frac{2 e (b d-a e)^2 (2 b B d+3 A b e-5 a B e)(a+b x)^{13}}{13 b^6}+$$
$$\frac{e^2 (b d-a e)(3 b B d+2 A b e-5 a B e)(a+b x)^{14}}{7 b^6}+$$
$$\frac{e^3 (4 b B d+A b e-5 a B e)(a+b x)^{15}}{15 b^6}+\frac{B e^4 (a+b x)^{16}}{16 b^6}$$

Result (type 1, 1098 leaves):

$$\frac{1}{240240} x \Big(8008 a^{10} \big(6 A (5 d^4+10 d^3 e x+10 d^2 e^2 x^2+5 d e^3 x^3+e^4 x^4)+$$
$$B x (15 d^4+40 d^3 e x+45 d^2 e^2 x^2+24 d e^3 x^3+5 e^4 x^4)\big)+$$
$$11440 a^9 b x \big(7 A (15 d^4+40 d^3 e x+45 d^2 e^2 x^2+24 d e^3 x^3+5 e^4 x^4)+$$
$$2 B x (35 d^4+105 d^3 e x+126 d^2 e^2 x^2+70 d e^3 x^3+15 e^4 x^4)\big)+$$
$$12870 a^8 b^2 x^2 \big(8 A (35 d^4+105 d^3 e x+126 d^2 e^2 x^2+70 d e^3 x^3+15 e^4 x^4)+$$
$$3 B x (70 d^4+224 d^3 e x+280 d^2 e^2 x^2+160 d e^3 x^3+35 e^4 x^4)\big)+$$
$$11440 a^7 b^3 x^3 \big(9 A (70 d^4+224 d^3 e x+280 d^2 e^2 x^2+160 d e^3 x^3+35 e^4 x^4)+$$
$$4 B x (126 d^4+420 d^3 e x+540 d^2 e^2 x^2+315 d e^3 x^3+70 e^4 x^4)\big)+$$
$$40040 a^6 b^4 x^4 \big(2 A (126 d^4+420 d^3 e x+540 d^2 e^2 x^2+315 d e^3 x^3+70 e^4 x^4)+$$
$$B x (210 d^4+720 d^3 e x+945 d^2 e^2 x^2+560 d e^3 x^3+126 e^4 x^4)\big)+$$
$$4368 a^5 b^5 x^5 \big(11 A (210 d^4+720 d^3 e x+945 d^2 e^2 x^2+560 d e^3 x^3+126 e^4 x^4)+$$
$$6 B x (330 d^4+1155 d^3 e x+1540 d^2 e^2 x^2+924 d e^3 x^3+210 e^4 x^4)\big)+$$
$$1820 a^4 b^6 x^6 \big(12 A (330 d^4+1155 d^3 e x+1540 d^2 e^2 x^2+924 d e^3 x^3+210 e^4 x^4)+$$
$$7 B x (495 d^4+1760 d^3 e x+2376 d^2 e^2 x^2+1440 d e^3 x^3+330 e^4 x^4)\big)+$$
$$560 a^3 b^7 x^7 \big(13 A (495 d^4+1760 d^3 e x+2376 d^2 e^2 x^2+1440 d e^3 x^3+330 e^4 x^4)+$$
$$8 B x (715 d^4+2574 d^3 e x+3510 d^2 e^2 x^2+2145 d e^3 x^3+495 e^4 x^4)\big)+$$
$$120 a^2 b^8 x^8 \big(14 A (715 d^4+2574 d^3 e x+3510 d^2 e^2 x^2+2145 d e^3 x^3+495 e^4 x^4)+$$
$$9 B x (1001 d^4+3640 d^3 e x+5005 d^2 e^2 x^2+3080 d e^3 x^3+715 e^4 x^4)\big)+$$
$$80 a b^9 x^9 \big(3 A (1001 d^4+3640 d^3 e x+5005 d^2 e^2 x^2+3080 d e^3 x^3+715 e^4 x^4)+$$
$$2 B x (1365 d^4+5005 d^3 e x+6930 d^2 e^2 x^2+4290 d e^3 x^3+1001 e^4 x^4)\big)+$$
$$b^{10} x^{10} \big(16 A (1365 d^4+5005 d^3 e x+6930 d^2 e^2 x^2+4290 d e^3 x^3+1001 e^4 x^4)+$$
$$11 B x (1820 d^4+6720 d^3 e x+9360 d^2 e^2 x^2+5824 d e^3 x^3+1365 e^4 x^4)\big)\Big)$$

Problem 1073: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^{10} (A+B x) (d+e x)^3 \, dx$$

Optimal (type 1, 159 leaves, 2 steps):

$$\frac{(A b-a B)(b d-a e)^3 (a+b x)^{11}}{11 b^5}+\frac{(b d-a e)^2 (b B d+3 A b e-4 a B e)(a+b x)^{12}}{12 b^5}+\frac{3 e (b d-a e)(b B d+A b e-2 a B e)(a+b x)^{13}}{13 b^5}+\frac{e^2 (3 b B d+A b e-4 a B e)(a+b x)^{14}}{14 b^5}+\frac{B e^3 (a+b x)^{15}}{15 b^5}$$

Result (type 1, 855 leaves):

$$\frac{1}{60060} x \Big(3003 a^{10} \left(5 A \left(4 d^3+6 d^2 e x+4 d e^2 x^2+e^3 x^3\right)+B x \left(10 d^3+20 d^2 e x+15 d e^2 x^2+4 e^3 x^3\right)\right)+10010 a^9 b x \left(3 A \left(10 d^3+20 d^2 e x+15 d e^2 x^2+4 e^3 x^3\right)+B x \left(20 d^3+45 d^2 e x+36 d e^2 x^2+10 e^3 x^3\right)\right)+6435 a^8 b^2 x^2 \left(7 A \left(20 d^3+45 d^2 e x+36 d e^2 x^2+10 e^3 x^3\right)+3 B x \left(35 d^3+84 d^2 e x+70 d e^2 x^2+20 e^3 x^3\right)\right)+25740 a^7 b^3 x^3 \left(2 A \left(35 d^3+84 d^2 e x+70 d e^2 x^2+20 e^3 x^3\right)+B x \left(56 d^3+140 d^2 e x+120 d e^2 x^2+35 e^3 x^3\right)\right)+5005 a^6 b^4 x^4 \left(9 A \left(56 d^3+140 d^2 e x+120 d e^2 x^2+35 e^3 x^3\right)+5 B x \left(84 d^3+216 d^2 e x+189 d e^2 x^2+56 e^3 x^3\right)\right)+6006 a^5 b^5 x^5 \left(5 A \left(84 d^3+216 d^2 e x+189 d e^2 x^2+56 e^3 x^3\right)+3 B x \left(120 d^3+315 d^2 e x+280 d e^2 x^2+84 e^3 x^3\right)\right)+1365 a^4 b^6 x^6 \left(11 A \left(120 d^3+315 d^2 e x+280 d e^2 x^2+84 e^3 x^3\right)+7 B x \left(165 d^3+440 d^2 e x+396 d e^2 x^2+120 e^3 x^3\right)\right)+1820 a^3 b^7 x^7 \left(3 A \left(165 d^3+440 d^2 e x+396 d e^2 x^2+120 e^3 x^3\right)+2 B x \left(220 d^3+594 d^2 e x+540 d e^2 x^2+165 e^3 x^3\right)\right)+105 a^2 b^8 x^8 \left(13 A \left(220 d^3+594 d^2 e x+540 d e^2 x^2+165 e^3 x^3\right)+9 B x \left(286 d^3+780 d^2 e x+715 d e^2 x^2+220 e^3 x^3\right)\right)+30 a b^9 x^9 \left(7 A \left(286 d^3+780 d^2 e x+715 d e^2 x^2+220 e^3 x^3\right)+5 B x \left(364 d^3+1001 d^2 e x+924 d e^2 x^2+286 e^3 x^3\right)\right)+b^{10} x^{10} \left(15 A \left(364 d^3+1001 d^2 e x+924 d e^2 x^2+286 e^3 x^3\right)+11 B x \left(455 d^3+1260 d^2 e x+1170 d e^2 x^2+364 e^3 x^3\right)\right)\Big)$$

Problem 1074: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^{10} (A+B x) (d+e x)^2 \, dx$$

Optimal (type 1, 118 leaves, 2 steps):

$$\frac{(A b-a B)(b d-a e)^2 (a+b x)^{11}}{11 b^4}+\frac{(b d-a e)(b B d+2 A b e-3 a B e)(a+b x)^{12}}{12 b^4}+\frac{e (2 b B d+A b e-3 a B e)(a+b x)^{13}}{13 b^4}+\frac{B e^2 (a+b x)^{14}}{14 b^4}$$

Result (type 1, 614 leaves):

$$\frac{1}{12012} x \left(1001 a^{10} \left(4 A \left(3 d^2 + 3 d e x + e^2 x^2\right) + B x \left(6 d^2 + 8 d e x + 3 e^2 x^2\right)\right) + 2002 a^9 b x \left(5 A \left(6 d^2 + 8 d e x + 3 e^2 x^2\right) + 2 B x \left(10 d^2 + 15 d e x + 6 e^2 x^2\right)\right) + 9009 a^8 b^2 x^2 \left(2 A \left(10 d^2 + 15 d e x + 6 e^2 x^2\right) + B x \left(15 d^2 + 24 d e x + 10 e^2 x^2\right)\right) + 3432 a^7 b^3 x^3 \left(7 A \left(15 d^2 + 24 d e x + 10 e^2 x^2\right) + 4 B x \left(21 d^2 + 35 d e x + 15 e^2 x^2\right)\right) + 3003 a^6 b^4 x^4 \left(8 A \left(21 d^2 + 35 d e x + 15 e^2 x^2\right) + 5 B x \left(28 d^2 + 48 d e x + 21 e^2 x^2\right)\right) + 6006 a^5 b^5 x^5 \left(3 A \left(28 d^2 + 48 d e x + 21 e^2 x^2\right) + 2 B x \left(36 d^2 + 63 d e x + 28 e^2 x^2\right)\right) + 1001 a^4 b^6 x^6 \left(10 A \left(36 d^2 + 63 d e x + 28 e^2 x^2\right) + 7 B x \left(45 d^2 + 80 d e x + 36 e^2 x^2\right)\right) + 364 a^3 b^7 x^7 \left(11 A \left(45 d^2 + 80 d e x + 36 e^2 x^2\right) + 8 B x \left(55 d^2 + 99 d e x + 45 e^2 x^2\right)\right) + 273 a^2 b^8 x^8 \left(4 A \left(55 d^2 + 99 d e x + 45 e^2 x^2\right) + 3 B x \left(66 d^2 + 120 d e x + 55 e^2 x^2\right)\right) + 14 a b^9 x^9 \left(13 A \left(66 d^2 + 120 d e x + 55 e^2 x^2\right) + 10 B x \left(78 d^2 + 143 d e x + 66 e^2 x^2\right)\right) + b^{10} x^{10} \left(14 A \left(78 d^2 + 143 d e x + 66 e^2 x^2\right) + 11 B x \left(91 d^2 + 168 d e x + 78 e^2 x^2\right)\right)\right)$$

Problem 1075: Result more than twice size of optimal antiderivative.

$$\int (a + b x)^{10} (A + B x) (d + e x) \, dx$$

Optimal (type 1, 75 leaves, 2 steps):

$$\frac{(A b - a B) (b d - a e) (a + b x)^{11}}{11 b^3} + \frac{(b B d + A b e - 2 a B e) (a + b x)^{12}}{12 b^3} + \frac{B e (a + b x)^{13}}{13 b^3}$$

Result (type 1, 383 leaves):

$$\frac{1}{66} a b^9 x^{10} \left(66 A d + 60 B d x + 60 A e x + 55 B e x^2\right) + \frac{1}{22} a^2 b^8 x^9 \left(110 A d + 99 B d x + 99 A e x + 90 B e x^2\right) + \frac{1}{6} a^{10} x \left(3 A (2 d + e x) + B x (3 d + 2 e x)\right) + \frac{3}{4} a^8 b^2 x^3 \left(5 A (4 d + 3 e x) + 3 B x (5 d + 4 e x)\right) + \frac{5}{6} a^9 b x^2 \left(B x (4 d + 3 e x) + A (6 d + 4 e x)\right) + 2 a^7 b^3 x^4 \left(3 A (5 d + 4 e x) + 2 B x (6 d + 5 e x)\right) + a^6 b^4 x^5 \left(7 A (6 d + 5 e x) + 5 B x (7 d + 6 e x)\right) + \frac{3}{2} a^5 b^5 x^6 \left(4 A (7 d + 6 e x) + 3 B x (8 d + 7 e x)\right) + \frac{5}{12} a^4 b^6 x^7 \left(9 A (8 d + 7 e x) + 7 B x (9 d + 8 e x)\right) + \frac{1}{3} a^3 b^7 x^8 \left(5 A (9 d + 8 e x) + 4 B x (10 d + 9 e x)\right) + \frac{b^{10} x^{11} \left(13 A (12 d + 11 e x) + 11 B x (13 d + 12 e x)\right)}{1716}$$

Problem 1076: Result more than twice size of optimal antiderivative.

$$\int (a + b x)^{10} (A + B x) \, dx$$

Optimal (type 1, 38 leaves, 2 steps):

$$\frac{(A b - a B) (a + b x)^{11}}{11 b^2} + \frac{B (a + b x)^{12}}{12 b^2}$$

Result (type 1, 198 leaves):

$$\frac{1}{132} x \left(66 a^{10} (2 A+B x)+220 a^9 b x (3 A+2 B x)+495 a^8 b^2 x^2 (4 A+3 B x)+792 a^7 b^3 x^3 (5 A+4 B x)+924 a^6 b^4 x^4 (6 A+5 B x)+792 a^5 b^5 x^5 (7 A+6 B x)+495 a^4 b^6 x^6 (8 A+7 B x)+220 a^3 b^7 x^7 (9 A+8 B x)+66 a^2 b^8 x^8 (10 A+9 B x)+12 a b^9 x^9 (11 A+10 B x)+b^{10} x^{10} (12 A+11 B x)\right)$$

Problem 1077: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^{10} (A+B x)}{d+e x} \, dx$$

Optimal (type 3, 348 leaves, 2 steps):

$$\frac{b (b d-a e)^9 (B d-A e) x}{e^{11}}-\frac{(b d-a e)^8 (B d-A e) (a+b x)^2}{2 e^{10}}+\frac{(b d-a e)^7 (B d-A e) (a+b x)^3}{3 e^9}-\frac{(b d-a e)^6 (B d-A e) (a+b x)^4}{4 e^8}+\frac{(b d-a e)^5 (B d-A e) (a+b x)^5}{5 e^7}-\frac{(b d-a e)^4 (B d-A e) (a+b x)^6}{6 e^6}+\frac{(b d-a e)^3 (B d-A e) (a+b x)^7}{7 e^5}-\frac{(b d-a e)^2 (B d-A e) (a+b x)^8}{8 e^4}+\frac{(b d-a e) (B d-A e) (a+b x)^9}{9 e^3}-\frac{(B d-A e) (a+b x)^{10}}{10 e^2}+\frac{B (a+b x)^{11}}{11 b e}-\frac{(b d-a e)^{10} (B d-A e) \text{Log}[d+e x]}{e^{12}}$$

Result (type 3, 1252 leaves):

$$\frac{1}{27720\, e^{11}} x \left(27720\, a^{10} B e^{10} + 138600\, a^9 b e^9 (-2 B d + 2 A e + B e x) + 207900\, a^8 b^2 e^8 \left(3 A e (-2 d + e x) + B \left(6 d^2 - 3 d e x + 2 e^2 x^2\right)\right) + 277200\, a^7 b^3 e^7 \left(2 A e \left(6 d^2 - 3 d e x + 2 e^2 x^2\right) + B \left(-12 d^3 + 6 d^2 e x - 4 d e^2 x^2 + 3 e^3 x^3\right)\right) + 97020\, a^6 b^4 e^6 \left(5 A e \left(-12 d^3 + 6 d^2 e x - 4 d e^2 x^2 + 3 e^3 x^3\right) + B \left(60 d^4 - 30 d^3 e x + 20 d^2 e^2 x^2 - 15 d e^3 x^3 + 12 e^4 x^4\right)\right) + 116424\, a^5 b^5 e^5 \left(A e \left(60 d^4 - 30 d^3 e x + 20 d^2 e^2 x^2 - 15 d e^3 x^3 + 12 e^4 x^4\right) + B \left(-60 d^5 + 30 d^4 e x - 20 d^3 e^2 x^2 + 15 d^2 e^3 x^3 - 12 d e^4 x^4 + 10 e^5 x^5\right)\right) + 13860\, a^4 b^6 e^4 \left(7 A e \left(-60 d^5 + 30 d^4 e x - 20 d^3 e^2 x^2 + 15 d^2 e^3 x^3 - 12 d e^4 x^4 + 10 e^5 x^5\right) + B \left(420 d^6 - 210 d^5 e x + 140 d^4 e^2 x^2 - 105 d^3 e^3 x^3 + 84 d^2 e^4 x^4 - 70 d e^5 x^5 + 60 e^6 x^6\right)\right) + 3960\, a^3 b^7 e^3 \left(2 A e \left(420 d^6 - 210 d^5 e x + 140 d^4 e^2 x^2 - 105 d^3 e^3 x^3 + 84 d^2 e^4 x^4 - 70 d e^5 x^5 + 60 e^6 x^6\right) + B \left(-840 d^7 + 420 d^6 e x - 280 d^5 e^2 x^2 + 210 d^4 e^3 x^3 - 168 d^3 e^4 x^4 + 140 d^2 e^5 x^5 - 120 d e^6 x^6 + 105 e^7 x^7\right)\right) + 495\, a^2 b^8 e^2 \left(3 A e \left(-840 d^7 + 420 d^6 e x - 280 d^5 e^2 x^2 + 210 d^4 e^3 x^3 - 168 d^3 e^4 x^4 + 140 d^2 e^5 x^5 - 120 d e^6 x^6 + 105 e^7 x^7\right) + B \left(2520 d^8 - 1260 d^7 e x + 840 d^6 e^2 x^2 - 630 d^5 e^3 x^3 + 504 d^4 e^4 x^4 - 420 d^3 e^5 x^5 + 360 d^2 e^6 x^6 - 315 d e^7 x^7 + 280 e^8 x^8\right)\right) + 110\, a b^9 e \left(A e \left(2520 d^8 - 1260 d^7 e x + 840 d^6 e^2 x^2 - 630 d^5 e^3 x^3 + 504 d^4 e^4 x^4 - 420 d^3 e^5 x^5 + 360 d^2 e^6 x^6 - 315 d e^7 x^7 + 280 e^8 x^8\right) + B \left(-2520 d^9 + 1260 d^8 e x - 840 d^7 e^2 x^2 + 630 d^6 e^3 x^3 - 504 d^5 e^4 x^4 + 420 d^4 e^5 x^5 - 360 d^3 e^6 x^6 + 315 d^2 e^7 x^7 - 280 d e^8 x^8 + 252 e^9 x^9\right)\right) + b^{10} \left(11 A e \left(-2520 d^9 + 1260 d^8 e x - 840 d^7 e^2 x^2 + 630 d^6 e^3 x^3 - 504 d^5 e^4 x^4 + 420 d^4 e^5 x^5 - 360 d^3 e^6 x^6 + 315 d^2 e^7 x^7 - 280 d e^8 x^8 + 252 e^9 x^9\right) + B \left(27720 d^{10} - 13860 d^9 e x + 9240 d^8 e^2 x^2 - 6930 d^7 e^3 x^3 + 5544 d^6 e^4 x^4 - 4620 d^5 e^5 x^5 + 3960 d^4 e^6 x^6 - 3465 d^3 e^7 x^7 + 3080 d^2 e^8 x^8 - 2772 d e^9 x^9 + 2520 e^{10} x^{10}\right)\right)\right) + \frac{(b d - a e)^{10} (-B d + A e) \operatorname{Log}[d + e x]}{e^{12}}$$

Problem 1078: Result more than twice size of optimal antiderivative.

$$\int \frac{(a + b x)^{10} (A + B x)}{(d + e x)^2} \, dx$$

Optimal (type 3, 445 leaves, 2 steps):

$$-\frac{5\,b\,(b\,d-a\,e)^8\,(11\,b\,B\,d-9\,A\,b\,e-2\,a\,B\,e)\,x}{e^{11}}+\frac{(b\,d-a\,e)^{10}\,(B\,d-A\,e)}{e^{12}\,(d+e\,x)}+\frac{15\,b^2\,(b\,d-a\,e)^7\,(11\,b\,B\,d-8\,A\,b\,e-3\,a\,B\,e)\,(d+e\,x)^2}{2\,e^{12}}-\frac{10\,b^3\,(b\,d-a\,e)^6\,(11\,b\,B\,d-7\,A\,b\,e-4\,a\,B\,e)\,(d+e\,x)^3}{e^{12}}+\frac{21\,b^4\,(b\,d-a\,e)^5\,(11\,b\,B\,d-6\,A\,b\,e-5\,a\,B\,e)\,(d+e\,x)^4}{2\,e^{12}}-\frac{42\,b^5\,(b\,d-a\,e)^4\,(11\,b\,B\,d-5\,A\,b\,e-6\,a\,B\,e)\,(d+e\,x)^5}{5\,e^{12}}+\frac{5\,b^6\,(b\,d-a\,e)^3\,(11\,b\,B\,d-4\,A\,b\,e-7\,a\,B\,e)\,(d+e\,x)^6}{e^{12}}-\frac{15\,b^7\,(b\,d-a\,e)^2\,(11\,b\,B\,d-3\,A\,b\,e-8\,a\,B\,e)\,(d+e\,x)^7}{7\,e^{12}}+\frac{5\,b^8\,(b\,d-a\,e)\,(11\,b\,B\,d-2\,A\,b\,e-9\,a\,B\,e)\,(d+e\,x)^8}{8\,e^{12}}-\frac{b^9\,(11\,b\,B\,d-A\,b\,e-10\,a\,B\,e)\,(d+e\,x)^9}{9\,e^{12}}+\frac{b^{10}\,B\,(d+e\,x)^{10}}{10\,e^{12}}+\frac{(b\,d-a\,e)^9\,(11\,b\,B\,d-10\,A\,b\,e-a\,B\,e)\,\mathrm{Log}[d+e\,x]}{e^{12}}$$

Result (type 3, 1486 leaves) :

$$\frac{1}{2520\, e^{12}\, (d+e x)} \Big(-2520\, a^{10} e^{10} (-B d + A e) + 25\,200\, a^9 b e^9 \left(A d e + B \left(-d^2 + d e x + e^2 x^2\right)\right) +$$
$$56\,700\, a^8 b^2 e^8 \left(2 A e \left(-d^2 + d e x + e^2 x^2\right) + B \left(2 d^3 - 4 d^2 e x - 3 d e^2 x^2 + e^3 x^3\right)\right) + 50\,400\, a^7 b^3 e^7$$
$$\left(3 A e \left(2 d^3 - 4 d^2 e x - 3 d e^2 x^2 + e^3 x^3\right) + 2 B \left(-3 d^4 + 9 d^3 e x + 6 d^2 e^2 x^2 - 2 d e^3 x^3 + e^4 x^4\right)\right) +$$
$$44\,100\, a^6 b^4 e^6 \left(4 A e \left(-3 d^4 + 9 d^3 e x + 6 d^2 e^2 x^2 - 2 d e^3 x^3 + e^4 x^4\right) +\right.$$
$$\left. B \left(12 d^5 - 48 d^4 e x - 30 d^3 e^2 x^2 + 10 d^2 e^3 x^3 - 5 d e^4 x^4 + 3 e^5 x^5\right)\right) +$$
$$10\,584\, a^5 b^5 e^5 \left(5 A e \left(12 d^5 - 48 d^4 e x - 30 d^3 e^2 x^2 + 10 d^2 e^3 x^3 - 5 d e^4 x^4 + 3 e^5 x^5\right) -\right.$$
$$\left. 6 B \left(10 d^6 - 50 d^5 e x - 30 d^4 e^2 x^2 + 10 d^3 e^3 x^3 - 5 d^2 e^4 x^4 + 3 d e^5 x^5 - 2 e^6 x^6\right)\right) +$$
$$8820\, a^4 b^6 e^4 \left(6 A e \left(-10 d^6 + 50 d^5 e x + 30 d^4 e^2 x^2 - 10 d^3 e^3 x^3 + 5 d^2 e^4 x^4 - 3 d e^5 x^5 + 2 e^6 x^6\right) +\right.$$
$$\left. B \left(60 d^7 - 360 d^6 e x - 210 d^5 e^2 x^2 + 70 d^4 e^3 x^3 - 35 d^3 e^4 x^4 + 21 d^2 e^5 x^5 - 14 d e^6 x^6 + 10 e^7 x^7\right)\right) +$$
$$720\, a^3 b^7 e^3 \left(7 A e \left(60 d^7 - 360 d^6 e x - 210 d^5 e^2 x^2 + 70 d^4 e^3 x^3 - 35 d^3 e^4 x^4 +\right.\right.$$
$$\left. 21 d^2 e^5 x^5 - 14 d e^6 x^6 + 10 e^7 x^7\right) - 4 B \left(105 d^8 - 735 d^7 e x - 420 d^6 e^2 x^2 +\right.$$
$$\left.\left. 140 d^5 e^3 x^3 - 70 d^4 e^4 x^4 + 42 d^3 e^5 x^5 - 28 d^2 e^6 x^6 + 20 d e^7 x^7 - 15 e^8 x^8\right)\right) +$$
$$135\, a^2 b^8 e^2 \left(8 A e \left(-105 d^8 + 735 d^7 e x + 420 d^6 e^2 x^2 - 140 d^5 e^3 x^3 + 70 d^4 e^4 x^4 - 42 d^3 e^5 x^5 +\right.\right.$$
$$\left. 28 d^2 e^6 x^6 - 20 d e^7 x^7 + 15 e^8 x^8\right) + 3 B \left(280 d^9 - 2240 d^8 e x - 1260 d^7 e^2 x^2 + 420 d^6 e^3 x^3 -\right.$$
$$\left.\left. 210 d^5 e^4 x^4 + 126 d^4 e^5 x^5 - 84 d^3 e^6 x^6 + 60 d^2 e^7 x^7 - 45 d e^8 x^8 + 35 e^9 x^9\right)\right) +$$
$$10\, a b^9 e \left(9 A e \left(280 d^9 - 2240 d^8 e x - 1260 d^7 e^2 x^2 + 420 d^6 e^3 x^3 - 210 d^5 e^4 x^4 +\right.\right.$$
$$\left. 126 d^4 e^5 x^5 - 84 d^3 e^6 x^6 + 60 d^2 e^7 x^7 - 45 d e^8 x^8 + 35 e^9 x^9\right) -$$
$$10 B \left(252 d^{10} - 2268 d^9 e x - 1260 d^8 e^2 x^2 + 420 d^7 e^3 x^3 - 210 d^6 e^4 x^4 + 126 d^5 e^5 x^5 -\right.$$
$$\left.\left. 84 d^4 e^6 x^6 + 60 d^3 e^7 x^7 - 45 d^2 e^8 x^8 + 35 d e^9 x^9 - 28 e^{10} x^{10}\right)\right) +$$
$$b^{10} \left(10 A e \left(-252 d^{10} + 2268 d^9 e x + 1260 d^8 e^2 x^2 - 420 d^7 e^3 x^3 + 210 d^6 e^4 x^4 -\right.\right.$$
$$\left. 126 d^5 e^5 x^5 + 84 d^4 e^6 x^6 - 60 d^3 e^7 x^7 + 45 d^2 e^8 x^8 - 35 d e^9 x^9 + 28 e^{10} x^{10}\right) +$$
$$B \left(2520 d^{11} - 25\,200 d^{10} e x - 13\,860 d^9 e^2 x^2 + 4620 d^8 e^3 x^3 - 2310 d^7 e^4 x^4 + 1386 d^6 e^5 x^5 -\right.$$
$$\left.\left. 924 d^5 e^6 x^6 + 660 d^4 e^7 x^7 - 495 d^3 e^8 x^8 + 385 d^2 e^9 x^9 - 308 d e^{10} x^{10} + 252 e^{11} x^{11}\right)\right) +$$
$$2520 (b d - a e)^9 (11 b B d - 10 A b e - a B e) (d + e x) \text{Log}[d + e x]\Big)$$

Problem 1079: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^{10} (A+B x)}{(d+e x)^3} \, dx$$

Optimal (type 3, 445 leaves, 2 steps):

$$\frac{15 b^2 (b d-a e)^7 (11 b B d-8 A b e-3 a B e) x}{e^{11}}+\frac{(b d-a e)^{10} (B d-A e)}{2 e^{12} (d+e x)^2}-$$
$$\frac{(b d-a e)^9 (11 b B d-10 A b e-a B e)}{e^{12} (d+e x)}-\frac{15 b^3 (b d-a e)^6 (11 b B d-7 A b e-4 a B e) (d+e x)^2}{e^{12}}+$$
$$\frac{14 b^4 (b d-a e)^5 (11 b B d-6 A b e-5 a B e) (d+e x)^3}{e^{12}}-$$
$$\frac{21 b^5 (b d-a e)^4 (11 b B d-5 A b e-6 a B e) (d+e x)^4}{2 e^{12}}+$$
$$\frac{6 b^6 (b d-a e)^3 (11 b B d-4 A b e-7 a B e) (d+e x)^5}{e^{12}}-$$
$$\frac{5 b^7 (b d-a e)^2 (11 b B d-3 A b e-8 a B e) (d+e x)^6}{2 e^{12}}+$$
$$\frac{5 b^8 (b d-a e) (11 b B d-2 A b e-9 a B e) (d+e x)^7}{7 e^{12}}-\frac{b^9 (11 b B d-A b e-10 a B e) (d+e x)^8}{8 e^{12}}+$$
$$\frac{b^{10} B (d+e x)^9}{9 e^{12}}-\frac{5 b (b d-a e)^8 (11 b B d-9 A b e-2 a B e) \text{Log}[d+e x]}{e^{12}}$$

Result (type 3, 1480 leaves):

$$\frac{1}{504 e^{12} (d+e x)^2}\Big(-252 a^{10} e^{10} (A e+B (d+2 e x))-2520 a^9 b e^9 (A e (d+2 e x)-B d (3 d+4 e x))+$$
$$11340 a^8 b^2 e^8 (A d e (3 d+4 e x)+B (-5 d^3-4 d^2 e x+4 d e^2 x^2+2 e^3 x^3))+30240 a^7 b^3 e^7$$
$$(A e (-5 d^3-4 d^2 e x+4 d e^2 x^2+2 e^3 x^3)+B (7 d^4+2 d^3 e x-11 d^2 e^2 x^2-4 d e^3 x^3+e^4 x^4))+$$
$$17640 a^6 b^4 e^6 (3 A e (7 d^4+2 d^3 e x-11 d^2 e^2 x^2-4 d e^3 x^3+e^4 x^4)+$$
$$B (-27 d^5+6 d^4 e x+63 d^3 e^2 x^2+20 d^2 e^3 x^3-5 d e^4 x^4+2 e^5 x^5))+$$
$$10584 a^5 b^5 e^5 (2 A e (-27 d^5+6 d^4 e x+63 d^3 e^2 x^2+20 d^2 e^3 x^3-5 d e^4 x^4+2 e^5 x^5)+$$
$$3 B (22 d^6-16 d^5 e x-68 d^4 e^2 x^2-20 d^3 e^3 x^3+5 d^2 e^4 x^4-2 d e^5 x^5+e^6 x^6))+$$
$$5292 a^4 b^6 e^4 (5 A e (22 d^6-16 d^5 e x-68 d^4 e^2 x^2-20 d^3 e^3 x^3+5 d^2 e^4 x^4-2 d e^5 x^5+e^6 x^6)+$$
$$B (-130 d^7+160 d^6 e x+500 d^5 e^2 x^2+140 d^4 e^3 x^3-35 d^3 e^4 x^4+14 d^2 e^5 x^5-7 d e^6 x^6+4 e^7 x^7))+$$
$$1008 a^3 b^7 e^3 (3 A e (-130 d^7+160 d^6 e x+500 d^5 e^2 x^2+140 d^4 e^3 x^3-35 d^3 e^4 x^4+$$
$$14 d^2 e^5 x^5-7 d e^6 x^6+4 e^7 x^7)+2 B (225 d^8-390 d^7 e x-1035 d^6 e^2 x^2-$$
$$280 d^5 e^3 x^3+70 d^4 e^4 x^4-28 d^3 e^5 x^5+14 d^2 e^6 x^6-8 d e^7 x^7+5 e^8 x^8))+$$
$$108 a^2 b^8 e^2 (7 A e (225 d^8-390 d^7 e x-1035 d^6 e^2 x^2-280 d^5 e^3 x^3+70 d^4 e^4 x^4-28 d^3 e^5 x^5+$$
$$14 d^2 e^6 x^6-8 d e^7 x^7+5 e^8 x^8)-3 B (595 d^9-1330 d^8 e x-3185 d^7 e^2 x^2-840 d^6 e^3 x^3+$$
$$210 d^5 e^4 x^4-84 d^4 e^5 x^5+42 d^3 e^6 x^6-24 d^2 e^7 x^7+15 d e^8 x^8-10 e^9 x^9))+$$
$$18 a b^9 e (4 A e (-595 d^9+1330 d^8 e x+3185 d^7 e^2 x^2+840 d^6 e^3 x^3-210 d^5 e^4 x^4+$$
$$84 d^4 e^5 x^5-42 d^3 e^6 x^6+24 d^2 e^7 x^7-15 d e^8 x^8+10 e^9 x^9)+$$
$$5 B (532 d^{10}-1456 d^9 e x-3248 d^8 e^2 x^2-840 d^7 e^3 x^3+210 d^6 e^4 x^4-84 d^5 e^5 x^5+$$
$$42 d^4 e^6 x^6-24 d^3 e^7 x^7+15 d^2 e^8 x^8-10 d e^9 x^9+7 e^{10} x^{10}))+$$
$$b^{10} (9 A e (532 d^{10}-1456 d^9 e x-3248 d^8 e^2 x^2-840 d^7 e^3 x^3+210 d^6 e^4 x^4-84 d^5 e^5 x^5+$$
$$42 d^4 e^6 x^6-24 d^3 e^7 x^7+15 d^2 e^8 x^8-10 d e^9 x^9+7 e^{10} x^{10})+$$
$$B (-5292 d^{11}+17136 d^{10} e x+36288 d^9 e^2 x^2+9240 d^8 e^3 x^3-2310 d^7 e^4 x^4+924 d^6 e^5 x^5-$$
$$462 d^5 e^6 x^6+264 d^4 e^7 x^7-165 d^3 e^8 x^8+110 d^2 e^9 x^9-77 d e^{10} x^{10}+56 e^{11} x^{11}))-$$
$$2520 b (b d-a e)^8 (11 b B d-9 A b e-2 a B e) (d+e x)^2 \text{Log}[d+e x]\Big)$$

Problem 1086: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^{10} (A+B x)}{(d+e x)^{10}} \, dx$$

Optimal (type 3, 441 leaves, 2 steps):

$$-\frac{b^9 (10 b B d-A b e-10 a B e) x}{e^{11}}+\frac{b^{10} B x^2}{2 e^{10}}+\frac{(b d-a e)^{10} (B d-A e)}{9 e^{12} (d+e x)^9}-\frac{(b d-a e)^9 (11 b B d-10 A b e-a B e)}{8 e^{12} (d+e x)^8}+\frac{5 b (b d-a e)^8 (11 b B d-9 A b e-2 a B e)}{7 e^{12} (d+e x)^7}-\frac{5 b^2 (b d-a e)^7 (11 b B d-8 A b e-3 a B e)}{2 e^{12} (d+e x)^6}+\frac{6 b^3 (b d-a e)^6 (11 b B d-7 A b e-4 a B e)}{e^{12} (d+e x)^5}-\frac{21 b^4 (b d-a e)^5 (11 b B d-6 A b e-5 a B e)}{2 e^{12} (d+e x)^4}+\frac{14 b^5 (b d-a e)^4 (11 b B d-5 A b e-6 a B e)}{e^{12} (d+e x)^3}-\frac{15 b^6 (b d-a e)^3 (11 b B d-4 A b e-7 a B e)}{e^{12} (d+e x)^2}+\frac{15 b^7 (b d-a e)^2 (11 b B d-3 A b e-8 a B e)}{e^{12} (d+e x)}+\frac{5 b^8 (b d-a e) (11 b B d-2 A b e-9 a B e) \text{Log}[d+e x]}{e^{12}}$$

Result (type 3, 1460 leaves):

$$-\frac{1}{504 e^{12} (d+e x)^9}\Big(7 a^{10} e^{10} (8 A e+B (d+9 e x))+10 a^9 b e^9 (7 A e (d+9 e x)+2 B (d^2+9 d e x+36 e^2 x^2))+$$
$$45 a^8 b^2 e^8 (2 A e (d^2+9 d e x+36 e^2 x^2)+B (d^3+9 d^2 e x+36 d e^2 x^2+84 e^3 x^3))+24 a^7 b^3 e^7$$
$$(5 A e (d^3+9 d^2 e x+36 d e^2 x^2+84 e^3 x^3)+4 B (d^4+9 d^3 e x+36 d^2 e^2 x^2+84 d e^3 x^3+126 e^4 x^4))+$$
$$42 a^6 b^4 e^6 (4 A e (d^4+9 d^3 e x+36 d^2 e^2 x^2+84 d e^3 x^3+126 e^4 x^4)+$$
$$5 B (d^5+9 d^4 e x+36 d^3 e^2 x^2+84 d^2 e^3 x^3+126 d e^4 x^4+126 e^5 x^5))+$$
$$252 a^5 b^5 e^5 (A e (d^5+9 d^4 e x+36 d^3 e^2 x^2+84 d^2 e^3 x^3+126 d e^4 x^4+126 e^5 x^5)+$$
$$2 B (d^6+9 d^5 e x+36 d^4 e^2 x^2+84 d^3 e^3 x^3+126 d^2 e^4 x^4+126 d e^5 x^5+84 e^6 x^6))+$$
$$210 a^4 b^6 e^4 (2 A e (d^6+9 d^5 e x+36 d^4 e^2 x^2+84 d^3 e^3 x^3+126 d^2 e^4 x^4+126 d e^5 x^5+84 e^6 x^6)+$$
$$7 B (d^7+9 d^6 e x+36 d^5 e^2 x^2+84 d^4 e^3 x^3+126 d^3 e^4 x^4+126 d^2 e^5 x^5+84 d e^6 x^6+36 e^7 x^7))+$$
$$840 a^3 b^7 e^3 (A e (d^7+9 d^6 e x+36 d^5 e^2 x^2+84 d^4 e^3 x^3+126 d^3 e^4 x^4+126 d^2 e^5 x^5+$$
$$84 d e^6 x^6+36 e^7 x^7)+8 B (d^8+9 d^7 e x+36 d^6 e^2 x^2+84 d^5 e^3 x^3+$$
$$126 d^4 e^4 x^4+126 d^3 e^5 x^5+84 d^2 e^6 x^6+36 d e^7 x^7+9 e^8 x^8))-$$
$$9 a^2 b^8 e^2 (-280 A e (d^8+9 d^7 e x+36 d^6 e^2 x^2+84 d^5 e^3 x^3+126 d^4 e^4 x^4+126 d^3 e^5 x^5+84 d^2 e^6 x^6+$$
$$36 d e^7 x^7+9 e^8 x^8)+B d (7129 d^8+61641 d^7 e x+235224 d^6 e^2 x^2+518616 d^5 e^3 x^3+$$
$$725004 d^4 e^4 x^4+661500 d^3 e^5 x^5+388080 d^2 e^6 x^6+136080 d e^7 x^7+22680 e^8 x^8))-$$
$$2 a b^9 e (A d e (7129 d^8+61641 d^7 e x+235224 d^6 e^2 x^2+518616 d^5 e^3 x^3+725004 d^4 e^4 x^4+$$
$$661500 d^3 e^5 x^5+388080 d^2 e^6 x^6+136080 d e^7 x^7+22680 e^8 x^8)-$$
$$10 B (4861 d^{10}+41229 d^9 e x+153576 d^8 e^2 x^2+328104 d^7 e^3 x^3+439236 d^6 e^4 x^4+375732$$
$$d^5 e^5 x^5+197568 d^4 e^6 x^6+54432 d^3 e^7 x^7+2268 d^2 e^8 x^8-2268 d e^9 x^9-252 e^{10} x^{10}))-$$
$$b^{10} (-2 A e (4861 d^{10}+41229 d^9 e x+153576 d^8 e^2 x^2+328104 d^7 e^3 x^3+439236 d^6 e^4 x^4+375732$$
$$d^5 e^5 x^5+197568 d^4 e^6 x^6+54432 d^3 e^7 x^7+2268 d^2 e^8 x^8-2268 d e^9 x^9-252 e^{10} x^{10})+$$
$$B (42131 d^{11}+351459 d^{10} e x+1281096 d^9 e^2 x^2+2656584 d^8 e^3 x^3+$$
$$3402756 d^7 e^4 x^4+2704212 d^6 e^5 x^5+1220688 d^5 e^6 x^6+190512 d^4 e^7 x^7-$$
$$77112 d^3 e^8 x^8-36288 d^2 e^9 x^9-2772 d e^{10} x^{10}+252 e^{11} x^{11}))-$$
$$2520 b^8 (b d-a e) (11 b B d-2 A b e-9 a B e) (d+e x)^9 \mathrm{Log}[d+e x]\Big)$$

Problem 1087: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^{10} (A+B x)}{(d+e x)^{11}} \, dx$$

Optimal (type 3, 446 leaves, 2 steps):

$$\frac{b^{10} B x}{e^{11}} + \frac{(b d - a e)^{10} (B d - A e)}{10 e^{12} (d + e x)^{10}} - \frac{(b d - a e)^9 (11 b B d - 10 A b e - a B e)}{9 e^{12} (d + e x)^9} + \frac{5 b (b d - a e)^8 (11 b B d - 9 A b e - 2 a B e)}{8 e^{12} (d + e x)^8} - \frac{15 b^2 (b d - a e)^7 (11 b B d - 8 A b e - 3 a B e)}{7 e^{12} (d + e x)^7} + \frac{5 b^3 (b d - a e)^6 (11 b B d - 7 A b e - 4 a B e)}{e^{12} (d + e x)^6} - \frac{42 b^4 (b d - a e)^5 (11 b B d - 6 A b e - 5 a B e)}{5 e^{12} (d + e x)^5} + \frac{21 b^5 (b d - a e)^4 (11 b B d - 5 A b e - 6 a B e)}{2 e^{12} (d + e x)^4} - \frac{10 b^6 (b d - a e)^3 (11 b B d - 4 A b e - 7 a B e)}{e^{12} (d + e x)^3} + \frac{15 b^7 (b d - a e)^2 (11 b B d - 3 A b e - 8 a B e)}{2 e^{12} (d + e x)^2} - \frac{5 b^8 (b d - a e) (11 b B d - 2 A b e - 9 a B e)}{e^{12} (d + e x)} - \frac{b^9 (11 b B d - A b e - 10 a B e) \text{Log}[d + e x]}{e^{12}}$$

Result (type 3, 1447 leaves):

$$-\frac{1}{2520 e^{12} (d + e x)^{10}} \Big(28 a^{10} e^{10} (9 A e + B (d + 10 e x)) + 70 a^9 b e^9 (4 A e (d + 10 e x) + B (d^2 + 10 d e x + 45 e^2 x^2)) + 45 a^8 b^2 e^8 (7 A e (d^2 + 10 d e x + 45 e^2 x^2) + 3 B (d^3 + 10 d^2 e x + 45 d e^2 x^2 + 120 e^3 x^3)) + 120 a^7 b^3 e^7 (3 A e (d^3 + 10 d^2 e x + 45 d e^2 x^2 + 120 e^3 x^3) + 2 B (d^4 + 10 d^3 e x + 45 d^2 e^2 x^2 + 120 d e^3 x^3 + 210 e^4 x^4)) + 420 a^6 b^4 e^6 (A e (d^4 + 10 d^3 e x + 45 d^2 e^2 x^2 + 120 d e^3 x^3 + 210 e^4 x^4) + B (d^5 + 10 d^4 e x + 45 d^3 e^2 x^2 + 120 d^2 e^3 x^3 + 210 d e^4 x^4 + 252 e^5 x^5)) + 252 a^5 b^5 e^5 (2 A e (d^5 + 10 d^4 e x + 45 d^3 e^2 x^2 + 120 d^2 e^3 x^3 + 210 d e^4 x^4 + 252 e^5 x^5) + 3 B (d^6 + 10 d^5 e x + 45 d^4 e^2 x^2 + 120 d^3 e^3 x^3 + 210 d^2 e^4 x^4 + 252 d e^5 x^5 + 210 e^6 x^6)) + 210 a^4 b^6 e^4 (3 A e (d^6 + 10 d^5 e x + 45 d^4 e^2 x^2 + 120 d^3 e^3 x^3 + 210 d^2 e^4 x^4 + 252 d e^5 x^5 + 210 e^6 x^6) + 7 B (d^7 + 10 d^6 e x + 45 d^5 e^2 x^2 + 120 d^4 e^3 x^3 + 210 d^3 e^4 x^4 + 252 d^2 e^5 x^5 + 210 d e^6 x^6 + 120 e^7 x^7)) + 840 a^3 b^7 e^3 (A e (d^7 + 10 d^6 e x + 45 d^5 e^2 x^2 + 120 d^4 e^3 x^3 + 210 d^3 e^4 x^4 + 252 d^2 e^5 x^5 + 210 d e^6 x^6 + 120 e^7 x^7) + 4 B (d^8 + 10 d^7 e x + 45 d^6 e^2 x^2 + 120 d^5 e^3 x^3 + 210 d^4 e^4 x^4 + 252 d^3 e^5 x^5 + 210 d^2 e^6 x^6 + 120 d e^7 x^7 + 45 e^8 x^8)) + 1260 a^2 b^8 e^2 (A e (d^8 + 10 d^7 e x + 45 d^6 e^2 x^2 + 120 d^5 e^3 x^3 + 210 d^4 e^4 x^4 + 252 d^3 e^5 x^5 + 210 d^2 e^6 x^6 + 120 d e^7 x^7 + 45 e^8 x^8) + 9 B (d^9 + 10 d^8 e x + 45 d^7 e^2 x^2 + 120 d^6 e^3 x^3 + 210 d^5 e^4 x^4 + 252 d^4 e^5 x^5 + 210 d^3 e^6 x^6 + 120 d^2 e^7 x^7 + 45 d e^8 x^8 + 10 e^9 x^9)) - 10 a b^9 e (-252 A e (d^9 + 10 d^8 e x + 45 d^7 e^2 x^2 + 120 d^6 e^3 x^3 + 210 d^5 e^4 x^4 + 252 d^4 e^5 x^5 + 210 d^3 e^6 x^6 + 120 d^2 e^7 x^7 + 45 d e^8 x^8 + 10 e^9 x^9) + B d (7381 d^9 + 71290 d^8 e x + 308205 d^7 e^2 x^2 + 784080 d^6 e^3 x^3 + 1296540 d^5 e^4 x^4 + 1450008 d^4 e^5 x^5 + 1102500 d^3 e^6 x^6 + 554400 d^2 e^7 x^7 + 170100 d e^8 x^8 + 25200 e^9 x^9)) - b^{10} (A d e (7381 d^9 + 71290 d^8 e x + 308205 d^7 e^2 x^2 + 784080 d^6 e^3 x^3 + 1296540 d^5 e^4 x^4 + 1450008 d^4 e^5 x^5 + 1102500 d^3 e^6 x^6 + 554400 d^2 e^7 x^7 + 170100 d e^8 x^8 + 25200 e^9 x^9) - B (55991 d^{11} + 532190 d^{10} e x + 2256255 d^9 e^2 x^2 + 5600880 d^8 e^3 x^3 + 8969940 d^7 e^4 x^4 + 9599688 d^6 e^5 x^5 + 6835500 d^5 e^6 x^6 + 3074400 d^4 e^7 x^7 + 737100 d^3 e^8 x^8 + 25200 d^2 e^9 x^9 - 25200 d e^{10} x^{10} - 2520 e^{11} x^{11})) + 2520 b^9 (11 b B d - A b e - 10 a B e) (d + e x)^{10} \text{Log}[d + e x]\Big)$$

Problem 1088: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^{10} (A+B x)}{(d+e x)^{12}} \, dx$$

Optimal (type 3, 321 leaves, 3 steps):

$$-\frac{(B d-A e) (a+b x)^{11}}{11 e (b d-a e) (d+e x)^{11}}-\frac{B (b d-a e)^{10}}{10 e^{12} (d+e x)^{10}}+\frac{10 b B (b d-a e)^9}{9 e^{12} (d+e x)^9}-\frac{45 b^2 B (b d-a e)^8}{8 e^{12} (d+e x)^8}+\frac{120 b^3 B (b d-a e)^7}{7 e^{12} (d+e x)^7}-\frac{35 b^4 B (b d-a e)^6}{e^{12} (d+e x)^6}+\frac{252 b^5 B (b d-a e)^5}{5 e^{12} (d+e x)^5}-\frac{105 b^6 B (b d-a e)^4}{2 e^{12} (d+e x)^4}+\frac{40 b^7 B (b d-a e)^3}{e^{12} (d+e x)^3}-\frac{45 b^8 B (b d-a e)^2}{2 e^{12} (d+e x)^2}+\frac{10 b^9 B (b d-a e)}{e^{12} (d+e x)}+\frac{b^{10} B \text{Log}[d+e x]}{e^{12}}$$

Result (type 3, 1443 leaves):

$$-\frac{1}{27720 e^{12} (d+e x)^{11}}\Big(252 a^{10} e^{10} (10 A e+B (d+11 e x))+280 a^9 b e^9 (9 A e (d+11 e x)+2 B (d^2+11 d e x+55 e^2 x^2))+315 a^8 b^2 e^8 (8 A e (d^2+11 d e x+55 e^2 x^2)+3 B (d^3+11 d^2 e x+55 d e^2 x^2+165 e^3 x^3))+360 a^7 b^3 e^7 (7 A e (d^3+11 d^2 e x+55 d e^2 x^2+165 e^3 x^3)+4 B (d^4+11 d^3 e x+55 d^2 e^2 x^2+165 d e^3 x^3+330 e^4 x^4))+420 a^6 b^4 e^6 (6 A e (d^4+11 d^3 e x+55 d^2 e^2 x^2+165 d e^3 x^3+330 e^4 x^4)+5 B (d^5+11 d^4 e x+55 d^3 e^2 x^2+165 d^2 e^3 x^3+330 d e^4 x^4+462 e^5 x^5))+504 a^5 b^5 e^5 (5 A e (d^5+11 d^4 e x+55 d^3 e^2 x^2+165 d^2 e^3 x^3+330 d e^4 x^4+462 e^5 x^5)+6 B (d^6+11 d^5 e x+55 d^4 e^2 x^2+165 d^3 e^3 x^3+330 d^2 e^4 x^4+462 d e^5 x^5+462 e^6 x^6))+630 a^4 b^6 e^4 (4 A e (d^6+11 d^5 e x+55 d^4 e^2 x^2+165 d^3 e^3 x^3+330 d^2 e^4 x^4+462 d e^5 x^5+462 e^6 x^6)+7 B (d^7+11 d^6 e x+55 d^5 e^2 x^2+165 d^4 e^3 x^3+330 d^3 e^4 x^4+462 d^2 e^5 x^5+462 d e^6 x^6+330 e^7 x^7))+840 a^3 b^7 e^3 (3 A e (d^7+11 d^6 e x+55 d^5 e^2 x^2+165 d^4 e^3 x^3+330 d^3 e^4 x^4+462 d^2 e^5 x^5+462 d e^6 x^6+330 e^7 x^7)+8 B (d^8+11 d^7 e x+55 d^6 e^2 x^2+165 d^5 e^3 x^3+330 d^4 e^4 x^4+462 d^3 e^5 x^5+462 d^2 e^6 x^6+330 d e^7 x^7+165 e^8 x^8))+1260 a^2 b^8 e^2 (2 A e (d^8+11 d^7 e x+55 d^6 e^2 x^2+165 d^5 e^3 x^3+330 d^4 e^4 x^4+462 d^3 e^5 x^5+462 d^2 e^6 x^6+330 d e^7 x^7+165 e^8 x^8)+9 B (d^9+11 d^8 e x+55 d^7 e^2 x^2+165 d^6 e^3 x^3+330 d^5 e^4 x^4+462 d^4 e^5 x^5+462 d^3 e^6 x^6+330 d^2 e^7 x^7+165 d e^8 x^8+55 e^9 x^9))+2520 a b^9 e (A e (d^9+11 d^8 e x+55 d^7 e^2 x^2+165 d^6 e^3 x^3+330 d^5 e^4 x^4+462 d^4 e^5 x^5+462 d^3 e^6 x^6+330 d^2 e^7 x^7+165 d e^8 x^8+55 e^9 x^9)+10 B (d^{10}+11 d^9 e x+55 d^8 e^2 x^2+165 d^7 e^3 x^3+330 d^6 e^4 x^4+462 d^5 e^5 x^5+462 d^4 e^6 x^6+330 d^3 e^7 x^7+165 d^2 e^8 x^8+55 d e^9 x^9+11 e^{10} x^{10}))+b^{10} (2520 A e (d^{10}+11 d^9 e x+55 d^8 e^2 x^2+165 d^7 e^3 x^3+330 d^6 e^4 x^4+462 d^5 e^5 x^5+462 d^4 e^6 x^6+330 d^3 e^7 x^7+165 d^2 e^8 x^8+55 d e^9 x^9+11 e^{10} x^{10})-B d (83711 d^{10}+893101 d^9 e x+4313045 d^8 e^2 x^2+12430935 d^7 e^3 x^3+23718420 d^6 e^4 x^4+31376268 d^5 e^5 x^5+29241828 d^4 e^6 x^6+19057500 d^3 e^7 x^7+8385300 d^2 e^8 x^8+2286900 d e^9 x^9+304920 e^{10} x^{10}))-27720 b^{10} B (d+e x)^{11} \text{Log}[d+e x]\Big)$$

Problem 1089: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^{10} (A+B x)}{(d+e x)^{13}} \, dx$$

Optimal (type 1, 86 leaves, 2 steps):

$$-\frac{(B d-A e) (a+b x)^{11}}{12 e (b d-a e) (d+e x)^{12}}+\frac{(11 b B d+A b e-12 a B e) (a+b x)^{11}}{132 e (b d-a e)^2 (d+e x)^{11}}$$

Result (type 1, 1421 leaves):

$$-\frac{1}{132 e^{12} (d+e x)^{12}}\Big(a^{10} e^{10} \left(11 A e+B (d+12 e x)\right)+2 a^9 b e^9 \left(5 A e (d+12 e x)+B \left(d^2+12 d e x+66 e^2 x^2\right)\right)+$$
$$3 a^8 b^2 e^8 \left(3 A e \left(d^2+12 d e x+66 e^2 x^2\right)+B \left(d^3+12 d^2 e x+66 d e^2 x^2+220 e^3 x^3\right)\right)+$$
$$4 a^7 b^3 e^7 \left(2 A e \left(d^3+12 d^2 e x+66 d e^2 x^2+220 e^3 x^3\right)+B \left(d^4+12 d^3 e x+66 d^2 e^2 x^2+220 d e^3 x^3+495 e^4 x^4\right)\right)+$$
$$a^6 b^4 e^6 \left(7 A e \left(d^4+12 d^3 e x+66 d^2 e^2 x^2+220 d e^3 x^3+495 e^4 x^4\right)+5 B \left(d^5+12 d^4 e x+66 d^3 e^2 x^2+220 d^2 e^3 x^3+495 d e^4 x^4+792 e^5 x^5\right)\right)+$$
$$6 a^5 b^5 e^5 \left(A e \left(d^5+12 d^4 e x+66 d^3 e^2 x^2+220 d^2 e^3 x^3+495 d e^4 x^4+792 e^5 x^5\right)+B \left(d^6+12 d^5 e x+66 d^4 e^2 x^2+220 d^3 e^3 x^3+495 d^2 e^4 x^4+792 d e^5 x^5+924 e^6 x^6\right)\right)+$$
$$a^4 b^6 e^4 \left(5 A e \left(d^6+12 d^5 e x+66 d^4 e^2 x^2+220 d^3 e^3 x^3+495 d^2 e^4 x^4+792 d e^5 x^5+924 e^6 x^6\right)+7 B \left(d^7+12 d^6 e x+66 d^5 e^2 x^2+220 d^4 e^3 x^3+495 d^3 e^4 x^4+792 d^2 e^5 x^5+924 d e^6 x^6+792 e^7 x^7\right)\right)+$$
$$4 a^3 b^7 e^3 \left(A e \left(d^7+12 d^6 e x+66 d^5 e^2 x^2+220 d^4 e^3 x^3+495 d^3 e^4 x^4+792 d^2 e^5 x^5+924 d e^6 x^6+792 e^7 x^7\right)+2 B \left(d^8+12 d^7 e x+66 d^6 e^2 x^2+220 d^5 e^3 x^3+495 d^4 e^4 x^4+792 d^3 e^5 x^5+924 d^2 e^6 x^6+792 d e^7 x^7+495 e^8 x^8\right)\right)+$$
$$3 a^2 b^8 e^2 \left(A e \left(d^8+12 d^7 e x+66 d^6 e^2 x^2+220 d^5 e^3 x^3+495 d^4 e^4 x^4+792 d^3 e^5 x^5+924 d^2 e^6 x^6+792 d e^7 x^7+495 e^8 x^8\right)+3 B \left(d^9+12 d^8 e x+66 d^7 e^2 x^2+220 d^6 e^3 x^3+495 d^5 e^4 x^4+792 d^4 e^5 x^5+924 d^3 e^6 x^6+792 d^2 e^7 x^7+495 d e^8 x^8+220 e^9 x^9\right)\right)+$$
$$2 a b^9 e \left(A e \left(d^9+12 d^8 e x+66 d^7 e^2 x^2+220 d^6 e^3 x^3+495 d^5 e^4 x^4+792 d^4 e^5 x^5+924 d^3 e^6 x^6+792 d^2 e^7 x^7+495 d e^8 x^8+220 e^9 x^9\right)+5 B \left(d^{10}+12 d^9 e x+66 d^8 e^2 x^2+220 d^7 e^3 x^3+495 d^6 e^4 x^4+792 d^5 e^5 x^5+924 d^4 e^6 x^6+792 d^3 e^7 x^7+495 d^2 e^8 x^8+220 d e^9 x^9+66 e^{10} x^{10}\right)\right)+$$
$$b^{10} \left(A e \left(d^{10}+12 d^9 e x+66 d^8 e^2 x^2+220 d^7 e^3 x^3+495 d^6 e^4 x^4+792 d^5 e^5 x^5+924 d^4 e^6 x^6+792 d^3 e^7 x^7+495 d^2 e^8 x^8+220 d e^9 x^9+66 e^{10} x^{10}\right)+11 B \left(d^{11}+12 d^{10} e x+66 d^9 e^2 x^2+220 d^8 e^3 x^3+495 d^7 e^4 x^4+792 d^6 e^5 x^5+924 d^5 e^6 x^6+792 d^4 e^7 x^7+495 d^3 e^8 x^8+220 d^2 e^9 x^9+66 d e^{10} x^{10}+12 e^{11} x^{11}\right)\right)\Big)$$

Problem 1090: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^{10} (A+B x)}{(d+e x)^{14}} \, dx$$

Optimal (type 1, 135 leaves, 3 steps):

$$-\frac{(B d-A e)(a+b x)^{11}}{13 e (b d-a e)(d+e x)^{13}}+\frac{(11 b B d+2 A b e-13 a B e)(a+b x)^{11}}{156 e (b d-a e)^2 (d+e x)^{12}}+\frac{b (11 b B d+2 A b e-13 a B e)(a+b x)^{11}}{1716 e (b d-a e)^3 (d+e x)^{11}}$$

Result (type 1, 1433 leaves):

$$-\frac{1}{1716 e^{12} (d+e x)^{13}}\Big(11 a^{10} e^{10} \left(12 A e+B (d+13 e x)\right)+10 a^9 b e^9 \left(11 A e (d+13 e x)+2 B \left(d^2+13 d e x+78 e^2 x^2\right)\right)+$$
$$9 a^8 b^2 e^8 \left(10 A e \left(d^2+13 d e x+78 e^2 x^2\right)+3 B \left(d^3+13 d^2 e x+78 d e^2 x^2+286 e^3 x^3\right)\right)+$$
$$8 a^7 b^3 e^7 \Big(9 A e \left(d^3+13 d^2 e x+78 d e^2 x^2+286 e^3 x^3\right)+$$
$$4 B \left(d^4+13 d^3 e x+78 d^2 e^2 x^2+286 d e^3 x^3+715 e^4 x^4\right)\Big)+$$
$$7 a^6 b^4 e^6 \Big(8 A e \left(d^4+13 d^3 e x+78 d^2 e^2 x^2+286 d e^3 x^3+715 e^4 x^4\right)+$$
$$5 B \left(d^5+13 d^4 e x+78 d^3 e^2 x^2+286 d^2 e^3 x^3+715 d e^4 x^4+1287 e^5 x^5\right)\Big)+$$
$$6 a^5 b^5 e^5 \Big(7 A e \left(d^5+13 d^4 e x+78 d^3 e^2 x^2+286 d^2 e^3 x^3+715 d e^4 x^4+1287 e^5 x^5\right)+6 B$$
$$\left(d^6+13 d^5 e x+78 d^4 e^2 x^2+286 d^3 e^3 x^3+715 d^2 e^4 x^4+1287 d e^5 x^5+1716 e^6 x^6\right)\Big)+5 a^4 b^6 e^4$$
$$\Big(6 A e \left(d^6+13 d^5 e x+78 d^4 e^2 x^2+286 d^3 e^3 x^3+715 d^2 e^4 x^4+1287 d e^5 x^5+1716 e^6 x^6\right)+7 B \big(d^7+$$
$$13 d^6 e x+78 d^5 e^2 x^2+286 d^4 e^3 x^3+715 d^3 e^4 x^4+1287 d^2 e^5 x^5+1716 d e^6 x^6+1716 e^7 x^7\big)\Big)+$$
$$4 a^3 b^7 e^3 \Big(5 A e \big(d^7+13 d^6 e x+78 d^5 e^2 x^2+286 d^4 e^3 x^3+715 d^3 e^4 x^4+1287 d^2 e^5 x^5+$$
$$1716 d e^6 x^6+1716 e^7 x^7\big)+8 B \big(d^8+13 d^7 e x+78 d^6 e^2 x^2+286 d^5 e^3 x^3+$$
$$715 d^4 e^4 x^4+1287 d^3 e^5 x^5+1716 d^2 e^6 x^6+1716 d e^7 x^7+1287 e^8 x^8\big)\Big)+$$
$$3 a^2 b^8 e^2 \Big(4 A e \big(d^8+13 d^7 e x+78 d^6 e^2 x^2+286 d^5 e^3 x^3+715 d^4 e^4 x^4+1287 d^3 e^5 x^5+$$
$$1716 d^2 e^6 x^6+1716 d e^7 x^7+1287 e^8 x^8\big)+9 B \big(d^9+13 d^8 e x+78 d^7 e^2 x^2+286 d^6 e^3 x^3+$$
$$715 d^5 e^4 x^4+1287 d^4 e^5 x^5+1716 d^3 e^6 x^6+1716 d^2 e^7 x^7+1287 d e^8 x^8+715 e^9 x^9\big)\Big)+$$
$$2 a b^9 e \Big(3 A e \big(d^9+13 d^8 e x+78 d^7 e^2 x^2+286 d^6 e^3 x^3+715 d^5 e^4 x^4+1287 d^4 e^5 x^5+$$
$$1716 d^3 e^6 x^6+1716 d^2 e^7 x^7+1287 d e^8 x^8+715 e^9 x^9\big)+$$
$$10 B \big(d^{10}+13 d^9 e x+78 d^8 e^2 x^2+286 d^7 e^3 x^3+715 d^6 e^4 x^4+1287 d^5 e^5 x^5+$$
$$1716 d^4 e^6 x^6+1716 d^3 e^7 x^7+1287 d^2 e^8 x^8+715 d e^9 x^9+286 e^{10} x^{10}\big)\Big)+$$
$$b^{10} \Big(2 A e \big(d^{10}+13 d^9 e x+78 d^8 e^2 x^2+286 d^7 e^3 x^3+715 d^6 e^4 x^4+1287 d^5 e^5 x^5+$$
$$1716 d^4 e^6 x^6+1716 d^3 e^7 x^7+1287 d^2 e^8 x^8+715 d e^9 x^9+286 e^{10} x^{10}\big)+$$
$$11 B \big(d^{11}+13 d^{10} e x+78 d^9 e^2 x^2+286 d^8 e^3 x^3+715 d^7 e^4 x^4+1287 d^6 e^5 x^5+$$
$$1716 d^5 e^6 x^6+1716 d^4 e^7 x^7+1287 d^3 e^8 x^8+715 d^2 e^9 x^9+286 d e^{10} x^{10}+78 e^{11} x^{11}\big)\Big)\Big)$$

Problem 1091: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^{10} (A+B x)}{(d+e x)^{15}} \, dx$$

Optimal (type 1, 185 leaves, 4 steps):

$$-\frac{(B d-A e)(a+b x)^{11}}{14 e (b d-a e)(d+e x)^{14}}+\frac{(11 b B d+3 A b e-14 a B e)(a+b x)^{11}}{182 e (b d-a e)^2 (d+e x)^{13}}+$$
$$\frac{b (11 b B d+3 A b e-14 a B e)(a+b x)^{11}}{1092 e (b d-a e)^3 (d+e x)^{12}}+\frac{b^2 (11 b B d+3 A b e-14 a B e)(a+b x)^{11}}{12012 e (b d-a e)^4 (d+e x)^{11}}$$

Result (type 1, 1430 leaves):

$$-\frac{1}{12012\, e^{12}\, (d+e x)^{14}}\Big(66\, a^{10} e^{10} \left(13 A e+B (d+14 e x)\right)+110\, a^9 b\, e^9 \left(6 A e (d+14 e x)+B \left(d^2+14 d e x+91 e^2 x^2\right)\right)+$$
$$45\, a^8 b^2 e^8 \left(11 A e \left(d^2+14 d e x+91 e^2 x^2\right)+3 B \left(d^3+14 d^2 e x+91 d e^2 x^2+364 e^3 x^3\right)\right)+$$
$$72\, a^7 b^3 e^7 \left(5 A e \left(d^3+14 d^2 e x+91 d e^2 x^2+364 e^3 x^3\right)+2 B \left(d^4+14 d^3 e x+91 d^2 e^2 x^2+364 d e^3 x^3+1001 e^4 x^4\right)\right)+$$
$$28\, a^6 b^4 e^6 \left(9 A e \left(d^4+14 d^3 e x+91 d^2 e^2 x^2+364 d e^3 x^3+1001 e^4 x^4\right)+5 B \left(d^5+14 d^4 e x+91 d^3 e^2 x^2+364 d^2 e^3 x^3+1001 d e^4 x^4+2002 e^5 x^5\right)\right)+$$
$$42\, a^5 b^5 e^5 \left(4 A e \left(d^5+14 d^4 e x+91 d^3 e^2 x^2+364 d^2 e^3 x^3+1001 d e^4 x^4+2002 e^5 x^5\right)+3 B \left(d^6+14 d^5 e x+91 d^4 e^2 x^2+364 d^3 e^3 x^3+1001 d^2 e^4 x^4+2002 d e^5 x^5+3003 e^6 x^6\right)\right)+$$
$$105\, a^4 b^6 e^4 \left(A e \left(d^6+14 d^5 e x+91 d^4 e^2 x^2+364 d^3 e^3 x^3+1001 d^2 e^4 x^4+2002 d e^5 x^5+3003 e^6 x^6\right)+B \left(d^7+14 d^6 e x+91 d^5 e^2 x^2+364 d^4 e^3 x^3+1001 d^3 e^4 x^4+2002 d^2 e^5 x^5+3003 d e^6 x^6+3432 e^7 x^7\right)\right)+$$
$$20\, a^3 b^7 e^3 \left(3 A e \left(d^7+14 d^6 e x+91 d^5 e^2 x^2+364 d^4 e^3 x^3+1001 d^3 e^4 x^4+2002 d^2 e^5 x^5+3003 d e^6 x^6+3432 e^7 x^7\right)+4 B \left(d^8+14 d^7 e x+91 d^6 e^2 x^2+364 d^5 e^3 x^3+1001 d^4 e^4 x^4+2002 d^3 e^5 x^5+3003 d^2 e^6 x^6+3432 d e^7 x^7+3003 e^8 x^8\right)\right)+$$
$$6\, a^2 b^8 e^2 \left(5 A e \left(d^8+14 d^7 e x+91 d^6 e^2 x^2+364 d^5 e^3 x^3+1001 d^4 e^4 x^4+2002 d^3 e^5 x^5+3003 d^2 e^6 x^6+3432 d e^7 x^7+3003 e^8 x^8\right)+9 B \left(d^9+14 d^8 e x+91 d^7 e^2 x^2+364 d^6 e^3 x^3+1001 d^5 e^4 x^4+2002 d^4 e^5 x^5+3003 d^3 e^6 x^6+3432 d^2 e^7 x^7+3003 d e^8 x^8+2002 e^9 x^9\right)\right)+$$
$$6\, a b^9 e \left(2 A e \left(d^9+14 d^8 e x+91 d^7 e^2 x^2+364 d^6 e^3 x^3+1001 d^5 e^4 x^4+2002 d^4 e^5 x^5+3003 d^3 e^6 x^6+3432 d^2 e^7 x^7+3003 d e^8 x^8+2002 e^9 x^9\right)+5 B \left(d^{10}+14 d^9 e x+91 d^8 e^2 x^2+364 d^7 e^3 x^3+1001 d^6 e^4 x^4+2002 d^5 e^5 x^5+3003 d^4 e^6 x^6+3432 d^3 e^7 x^7+3003 d^2 e^8 x^8+2002 d e^9 x^9+1001 e^{10} x^{10}\right)\right)+$$
$$b^{10} \left(3 A e \left(d^{10}+14 d^9 e x+91 d^8 e^2 x^2+364 d^7 e^3 x^3+1001 d^6 e^4 x^4+2002 d^5 e^5 x^5+3003 d^4 e^6 x^6+3432 d^3 e^7 x^7+3003 d^2 e^8 x^8+2002 d e^9 x^9+1001 e^{10} x^{10}\right)+11 B \left(d^{11}+14 d^{10} e x+91 d^9 e^2 x^2+364 d^8 e^3 x^3+1001 d^7 e^4 x^4+2002 d^6 e^5 x^5+3003 d^5 e^6 x^6+3432 d^4 e^7 x^7+3003 d^3 e^8 x^8+2002 d^2 e^9 x^9+1001 d e^{10} x^{10}+364 e^{11} x^{11}\right)\right)\Big)$$

Problem 1092: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^{10} (A+B x)}{(d+e x)^{16}}\, dx$$

Optimal (type 1, 235 leaves, 5 steps):

$$-\frac{(B d-A e) (a+b x)^{11}}{15 e (b d-a e) (d+e x)^{15}}+\frac{(11 b B d+4 A b e-15 a B e) (a+b x)^{11}}{210 e (b d-a e)^2 (d+e x)^{14}}+\frac{b (11 b B d+4 A b e-15 a B e) (a+b x)^{11}}{910 e (b d-a e)^3 (d+e x)^{13}}+\frac{b^2 (11 b B d+4 A b e-15 a B e) (a+b x)^{11}}{5460 e (b d-a e)^4 (d+e x)^{12}}+\frac{b^3 (11 b B d+4 A b e-15 a B e) (a+b x)^{11}}{60060 e (b d-a e)^5 (d+e x)^{11}}$$

Result (type 1, 1430 leaves):

$$-\frac{1}{60060\, e^{12}\, (d+e\,x)^{15}}\Big(286\, a^{10}\, e^{10}\, (14\, A\, e+B\, (d+15\, e\, x))+220\, a^9\, b\, e^9\, \big(13\, A\, e\, (d+15\, e\, x)+2\, B\, (d^2+15\, d\, e\, x+105\, e^2\, x^2)\big)+$$
$$495\, a^8\, b^2\, e^8\, \big(4\, A\, e\, (d^2+15\, d\, e\, x+105\, e^2\, x^2)+B\, (d^3+15\, d^2\, e\, x+105\, d\, e^2\, x^2+455\, e^3\, x^3)\big)+$$
$$120\, a^7\, b^3\, e^7\, \big(11\, A\, e\, (d^3+15\, d^2\, e\, x+105\, d\, e^2\, x^2+455\, e^3\, x^3)+$$
$$4\, B\, (d^4+15\, d^3\, e\, x+105\, d^2\, e^2\, x^2+455\, d\, e^3\, x^3+1365\, e^4\, x^4)\big)+$$
$$420\, a^6\, b^4\, e^6\, \big(2\, A\, e\, (d^4+15\, d^3\, e\, x+105\, d^2\, e^2\, x^2+455\, d\, e^3\, x^3+1365\, e^4\, x^4)+$$
$$B\, (d^5+15\, d^4\, e\, x+105\, d^3\, e^2\, x^2+455\, d^2\, e^3\, x^3+1365\, d\, e^4\, x^4+3003\, e^5\, x^5)\big)+$$
$$168\, a^5\, b^5\, e^5\, \big(3\, A\, e\, (d^5+15\, d^4\, e\, x+105\, d^3\, e^2\, x^2+455\, d^2\, e^3\, x^3+1365\, d\, e^4\, x^4+3003\, e^5\, x^5)+$$
$$2\, B\, (d^6+15\, d^5\, e\, x+105\, d^4\, e^2\, x^2+455\, d^3\, e^3\, x^3+1365\, d^2\, e^4\, x^4+3003\, d\, e^5\, x^5+5005\, e^6\, x^6)\big)+35\, a^4$$
$$b^6\, e^4\, \big(8\, A\, e\, (d^6+15\, d^5\, e\, x+105\, d^4\, e^2\, x^2+455\, d^3\, e^3\, x^3+1365\, d^2\, e^4\, x^4+3003\, d\, e^5\, x^5+5005\, e^6\, x^6)+$$
$$7\, B\, (d^7+15\, d^6\, e\, x+105\, d^5\, e^2\, x^2+455\, d^4\, e^3\, x^3+$$
$$1365\, d^3\, e^4\, x^4+3003\, d^2\, e^5\, x^5+5005\, d\, e^6\, x^6+6435\, e^7\, x^7)\big)+$$
$$20\, a^3\, b^7\, e^3\, \big(7\, A\, e\, (d^7+15\, d^6\, e\, x+105\, d^5\, e^2\, x^2+455\, d^4\, e^3\, x^3+1365\, d^3\, e^4\, x^4+3003\, d^2\, e^5\, x^5+$$
$$5005\, d\, e^6\, x^6+6435\, e^7\, x^7)+8\, B\, (d^8+15\, d^7\, e\, x+105\, d^6\, e^2\, x^2+455\, d^5\, e^3\, x^3+$$
$$1365\, d^4\, e^4\, x^4+3003\, d^3\, e^5\, x^5+5005\, d^2\, e^6\, x^6+6435\, d\, e^7\, x^7+6435\, e^8\, x^8)\big)+$$
$$30\, a^2\, b^8\, e^2\, \big(2\, A\, e\, (d^8+15\, d^7\, e\, x+105\, d^6\, e^2\, x^2+455\, d^5\, e^3\, x^3+1365\, d^4\, e^4\, x^4+3003\, d^3\, e^5\, x^5+$$
$$5005\, d^2\, e^6\, x^6+6435\, d\, e^7\, x^7+6435\, e^8\, x^8)+3\, B\, (d^9+15\, d^8\, e\, x+105\, d^7\, e^2\, x^2+455\, d^6\, e^3\, x^3+$$
$$1365\, d^5\, e^4\, x^4+3003\, d^4\, e^5\, x^5+5005\, d^3\, e^6\, x^6+6435\, d^2\, e^7\, x^7+6435\, d\, e^8\, x^8+5005\, e^9\, x^9)\big)+$$
$$20\, a\, b^9\, e\, \big(A\, e\, (d^9+15\, d^8\, e\, x+105\, d^7\, e^2\, x^2+455\, d^6\, e^3\, x^3+1365\, d^5\, e^4\, x^4+3003\, d^4\, e^5\, x^5+$$
$$5005\, d^3\, e^6\, x^6+6435\, d^2\, e^7\, x^7+6435\, d\, e^8\, x^8+5005\, e^9\, x^9)+$$
$$2\, B\, (d^{10}+15\, d^9\, e\, x+105\, d^8\, e^2\, x^2+455\, d^7\, e^3\, x^3+1365\, d^6\, e^4\, x^4+3003\, d^5\, e^5\, x^5+$$
$$5005\, d^4\, e^6\, x^6+6435\, d^3\, e^7\, x^7+6435\, d^2\, e^8\, x^8+5005\, d\, e^9\, x^9+3003\, e^{10}\, x^{10})\big)+$$
$$b^{10}\, \big(4\, A\, e\, (d^{10}+15\, d^9\, e\, x+105\, d^8\, e^2\, x^2+455\, d^7\, e^3\, x^3+1365\, d^6\, e^4\, x^4+3003\, d^5\, e^5\, x^5+$$
$$5005\, d^4\, e^6\, x^6+6435\, d^3\, e^7\, x^7+6435\, d^2\, e^8\, x^8+5005\, d\, e^9\, x^9+3003\, e^{10}\, x^{10})+$$
$$11\, B\, (d^{11}+15\, d^{10}\, e\, x+105\, d^9\, e^2\, x^2+455\, d^8\, e^3\, x^3+1365\, d^7\, e^4\, x^4+3003\, d^6\, e^5\, x^5+$$
$$5005\, d^5\, e^6\, x^6+6435\, d^4\, e^7\, x^7+6435\, d^3\, e^8\, x^8+5005\, d^2\, e^9\, x^9+3003\, d\, e^{10}\, x^{10}+1365\, e^{11}\, x^{11})\big)\Big)$$

Problem 1093: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b\,x)^{10}\,(A+B\,x)}{(d+e\,x)^{17}}\,dx$$

Optimal (type 1, 285 leaves, 6 steps):

$$-\frac{(B\,d-A\,e)\,(a+b\,x)^{11}}{16\,e\,(b\,d-a\,e)\,(d+e\,x)^{16}}+\frac{(11\,b\,B\,d+5\,A\,b\,e-16\,a\,B\,e)\,(a+b\,x)^{11}}{240\,e\,(b\,d-a\,e)^2\,(d+e\,x)^{15}}+$$
$$\frac{b\,(11\,b\,B\,d+5\,A\,b\,e-16\,a\,B\,e)\,(a+b\,x)^{11}}{840\,e\,(b\,d-a\,e)^3\,(d+e\,x)^{14}}+\frac{b^2\,(11\,b\,B\,d+5\,A\,b\,e-16\,a\,B\,e)\,(a+b\,x)^{11}}{3640\,e\,(b\,d-a\,e)^4\,(d+e\,x)^{13}}+$$
$$\frac{b^3\,(11\,b\,B\,d+5\,A\,b\,e-16\,a\,B\,e)\,(a+b\,x)^{11}}{21840\,e\,(b\,d-a\,e)^5\,(d+e\,x)^{12}}+\frac{b^4\,(11\,b\,B\,d+5\,A\,b\,e-16\,a\,B\,e)\,(a+b\,x)^{11}}{240240\,e\,(b\,d-a\,e)^6\,(d+e\,x)^{11}}$$

Result (type 1, 1429 leaves):

$$-\frac{1}{240240\,e^{12}\,(d+e\,x)^{16}}\Big(1001\,a^{10}\,e^{10}\,(15\,A\,e+B\,(d+16\,e\,x))+1430\,a^9\,b\,e^9\,(7\,A\,e\,(d+16\,e\,x)+B\,(d^2+16\,d\,e\,x+120\,e^2\,x^2))+$$
$$495\,a^8\,b^2\,e^8\,(13\,A\,e\,(d^2+16\,d\,e\,x+120\,e^2\,x^2)+3\,B\,(d^3+16\,d^2\,e\,x+120\,d\,e^2\,x^2+560\,e^3\,x^3))+$$
$$1320\,a^7\,b^3\,e^7\,(3\,A\,e\,(d^3+16\,d^2\,e\,x+120\,d\,e^2\,x^2+560\,e^3\,x^3)+B\,(d^4+16\,d^3\,e\,x+120\,d^2\,e^2\,x^2+560\,d\,e^3\,x^3+1820\,e^4\,x^4))+$$
$$210\,a^6\,b^4\,e^6\,(11\,A\,e\,(d^4+16\,d^3\,e\,x+120\,d^2\,e^2\,x^2+560\,d\,e^3\,x^3+1820\,e^4\,x^4)+5\,B\,(d^5+16\,d^4\,e\,x+120\,d^3\,e^2\,x^2+560\,d^2\,e^3\,x^3+1820\,d\,e^4\,x^4+4368\,e^5\,x^5))+$$
$$252\,a^5\,b^5\,e^5\,(5\,A\,e\,(d^5+16\,d^4\,e\,x+120\,d^3\,e^2\,x^2+560\,d^2\,e^3\,x^3+1820\,d\,e^4\,x^4+4368\,e^5\,x^5)+3\,B\,(d^6+16\,d^5\,e\,x+120\,d^4\,e^2\,x^2+560\,d^3\,e^3\,x^3+1820\,d^2\,e^4\,x^4+4368\,d\,e^5\,x^5+8008\,e^6\,x^6))+70\,a^4$$
$$b^6\,e^4\,(9\,A\,e\,(d^6+16\,d^5\,e\,x+120\,d^4\,e^2\,x^2+560\,d^3\,e^3\,x^3+1820\,d^2\,e^4\,x^4+4368\,d\,e^5\,x^5+8008\,e^6\,x^6)+7\,B\,(d^7+16\,d^6\,e\,x+120\,d^5\,e^2\,x^2+560\,d^4\,e^3\,x^3+1820\,d^3\,e^4\,x^4+4368\,d^2\,e^5\,x^5+8008\,d\,e^6\,x^6+11440\,e^7\,x^7))+$$
$$280\,a^3\,b^7\,e^3\,(A\,e\,(d^7+16\,d^6\,e\,x+120\,d^5\,e^2\,x^2+560\,d^4\,e^3\,x^3+1820\,d^3\,e^4\,x^4+4368\,d^2\,e^5\,x^5+8008\,d\,e^6\,x^6+11440\,e^7\,x^7)+B\,(d^8+16\,d^7\,e\,x+120\,d^6\,e^2\,x^2+560\,d^5\,e^3\,x^3+1820\,d^4\,e^4\,x^4+4368\,d^3\,e^5\,x^5+8008\,d^2\,e^6\,x^6+11440\,d\,e^7\,x^7+12870\,e^8\,x^8))+$$
$$15\,a^2\,b^8\,e^2\,(7\,A\,e\,(d^8+16\,d^7\,e\,x+120\,d^6\,e^2\,x^2+560\,d^5\,e^3\,x^3+1820\,d^4\,e^4\,x^4+4368\,d^3\,e^5\,x^5+8008\,d^2\,e^6\,x^6+11440\,d\,e^7\,x^7+12870\,e^8\,x^8)+9\,B\,(d^9+16\,d^8\,e\,x+120\,d^7\,e^2\,x^2+560\,d^6\,e^3\,x^3+1820\,d^5\,e^4\,x^4+4368\,d^4\,e^5\,x^5+8008\,d^3\,e^6\,x^6+11440\,d^2\,e^7\,x^7+12870\,d\,e^8\,x^8+11440\,e^9\,x^9))+$$
$$10\,a\,b^9\,e\,(3\,A\,e\,(d^9+16\,d^8\,e\,x+120\,d^7\,e^2\,x^2+560\,d^6\,e^3\,x^3+1820\,d^5\,e^4\,x^4+4368\,d^4\,e^5\,x^5+8008\,d^3\,e^6\,x^6+11440\,d^2\,e^7\,x^7+12870\,d\,e^8\,x^8+11440\,e^9\,x^9)+5\,B\,(d^{10}+16\,d^9\,e\,x+120\,d^8\,e^2\,x^2+560\,d^7\,e^3\,x^3+1820\,d^6\,e^4\,x^4+4368\,d^5\,e^5\,x^5+8008\,d^4\,e^6\,x^6+11440\,d^3\,e^7\,x^7+12870\,d^2\,e^8\,x^8+11440\,d\,e^9\,x^9+8008\,e^{10}\,x^{10}))+$$
$$b^{10}\,(5\,A\,e\,(d^{10}+16\,d^9\,e\,x+120\,d^8\,e^2\,x^2+560\,d^7\,e^3\,x^3+1820\,d^6\,e^4\,x^4+4368\,d^5\,e^5\,x^5+8008\,d^4\,e^6\,x^6+11440\,d^3\,e^7\,x^7+12870\,d^2\,e^8\,x^8+11440\,d\,e^9\,x^9+8008\,e^{10}\,x^{10})+11\,B\,(d^{11}+16\,d^{10}\,e\,x+120\,d^9\,e^2\,x^2+560\,d^8\,e^3\,x^3+1820\,d^7\,e^4\,x^4+4368\,d^6\,e^5\,x^5+8008\,d^5\,e^6\,x^6+11440\,d^4\,e^7\,x^7+12870\,d^3\,e^8\,x^8+11440\,d^2\,e^9\,x^9+8008\,d\,e^{10}\,x^{10}+4368\,e^{11}\,x^{11}))\Big)$$

Problem 1094: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b\,x)^{10}\,(A+B\,x)}{(d+e\,x)^{18}}\,dx$$

Optimal (type 1, 335 leaves, 7 steps):

$$-\frac{(B\,d-A\,e)\,(a+b\,x)^{11}}{17\,e\,(b\,d-a\,e)\,(d+e\,x)^{17}}+\frac{(11\,b\,B\,d+6\,A\,b\,e-17\,a\,B\,e)\,(a+b\,x)^{11}}{272\,e\,(b\,d-a\,e)^2\,(d+e\,x)^{16}}+$$
$$\frac{b\,(11\,b\,B\,d+6\,A\,b\,e-17\,a\,B\,e)\,(a+b\,x)^{11}}{816\,e\,(b\,d-a\,e)^3\,(d+e\,x)^{15}}+\frac{b^2\,(11\,b\,B\,d+6\,A\,b\,e-17\,a\,B\,e)\,(a+b\,x)^{11}}{2856\,e\,(b\,d-a\,e)^4\,(d+e\,x)^{14}}+$$
$$\frac{b^3\,(11\,b\,B\,d+6\,A\,b\,e-17\,a\,B\,e)\,(a+b\,x)^{11}}{12376\,e\,(b\,d-a\,e)^5\,(d+e\,x)^{13}}+$$
$$\frac{b^4\,(11\,b\,B\,d+6\,A\,b\,e-17\,a\,B\,e)\,(a+b\,x)^{11}}{74256\,e\,(b\,d-a\,e)^6\,(d+e\,x)^{12}}+\frac{b^5\,(11\,b\,B\,d+6\,A\,b\,e-17\,a\,B\,e)\,(a+b\,x)^{11}}{816816\,e\,(b\,d-a\,e)^7\,(d+e\,x)^{11}}$$

Result (type 1, 1433 leaves):

$$-\frac{1}{816816\, e^{12}\, (d+e x)^{17}} \left(3003\, a^{10} e^{10} \left(16 A e+B (d+17 e x)\right)+\right.$$
$$2002\, a^9 b\, e^9 \left(15 A e (d+17 e x)+2 B \left(d^2+17 d e x+136 e^2 x^2\right)\right)+$$
$$1287\, a^8 b^2 e^8 \left(14 A e \left(d^2+17 d e x+136 e^2 x^2\right)+3 B \left(d^3+17 d^2 e x+136 d e^2 x^2+680 e^3 x^3\right)\right)+$$
$$792\, a^7 b^3 e^7 \left(13 A e \left(d^3+17 d^2 e x+136 d e^2 x^2+680 e^3 x^3\right)+\right.$$
$$\left.4 B \left(d^4+17 d^3 e x+136 d^2 e^2 x^2+680 d e^3 x^3+2380 e^4 x^4\right)\right)+$$
$$462\, a^6 b^4 e^6 \left(12 A e \left(d^4+17 d^3 e x+136 d^2 e^2 x^2+680 d e^3 x^3+2380 e^4 x^4\right)+\right.$$
$$\left.5 B \left(d^5+17 d^4 e x+136 d^3 e^2 x^2+680 d^2 e^3 x^3+2380 d e^4 x^4+6188 e^5 x^5\right)\right)+$$
$$252\, a^5 b^5 e^5 \left(11 A e \left(d^5+17 d^4 e x+136 d^3 e^2 x^2+680 d^2 e^3 x^3+2380 d e^4 x^4+6188 e^5 x^5\right)+6 B\right.$$
$$\left.\left(d^6+17 d^5 e x+136 d^4 e^2 x^2+680 d^3 e^3 x^3+2380 d^2 e^4 x^4+6188 d e^5 x^5+12376 e^6 x^6\right)\right)+126\, a^4$$
$$b^6 e^4 \left(10 A e \left(d^6+17 d^5 e x+136 d^4 e^2 x^2+680 d^3 e^3 x^3+2380 d^2 e^4 x^4+6188 d e^5 x^5+12376 e^6 x^6\right)+\right.$$
$$7 B \left(d^7+17 d^6 e x+136 d^5 e^2 x^2+680 d^4 e^3 x^3+\right.$$
$$\left.\left.2380 d^3 e^4 x^4+6188 d^2 e^5 x^5+12376 d e^6 x^6+19448 e^7 x^7\right)\right)+$$
$$56\, a^3 b^7 e^3 \left(9 A e \left(d^7+17 d^6 e x+136 d^5 e^2 x^2+680 d^4 e^3 x^3+2380 d^3 e^4 x^4+6188 d^2 e^5 x^5+\right.\right.$$
$$\left.12376 d e^6 x^6+19448 e^7 x^7\right)+8 B \left(d^8+17 d^7 e x+136 d^6 e^2 x^2+680 d^5 e^3 x^3+\right.$$
$$\left.\left.2380 d^4 e^4 x^4+6188 d^3 e^5 x^5+12376 d^2 e^6 x^6+19448 d e^7 x^7+24310 e^8 x^8\right)\right)+$$
$$21\, a^2 b^8 e^2 \left(8 A e \left(d^8+17 d^7 e x+136 d^6 e^2 x^2+680 d^5 e^3 x^3+2380 d^4 e^4 x^4+\right.\right.$$
$$\left.6188 d^3 e^5 x^5+12376 d^2 e^6 x^6+19448 d e^7 x^7+24310 e^8 x^8\right)+$$
$$9 B \left(d^9+17 d^8 e x+136 d^7 e^2 x^2+680 d^6 e^3 x^3+2380 d^5 e^4 x^4+6188 d^4 e^5 x^5+\right.$$
$$\left.\left.12376 d^3 e^6 x^6+19448 d^2 e^7 x^7+24310 d e^8 x^8+24310 e^9 x^9\right)\right)+$$
$$6\, a b^9 e \left(7 A e \left(d^9+17 d^8 e x+136 d^7 e^2 x^2+680 d^6 e^3 x^3+2380 d^5 e^4 x^4+6188 d^4 e^5 x^5+\right.\right.$$
$$\left.12376 d^3 e^6 x^6+19448 d^2 e^7 x^7+24310 d e^8 x^8+24310 e^9 x^9\right)+$$
$$10 B \left(d^{10}+17 d^9 e x+136 d^8 e^2 x^2+680 d^7 e^3 x^3+2380 d^6 e^4 x^4+6188 d^5 e^5 x^5+\right.$$
$$\left.\left.12376 d^4 e^6 x^6+19448 d^3 e^7 x^7+24310 d^2 e^8 x^8+24310 d e^9 x^9+19448 e^{10} x^{10}\right)\right)+$$
$$b^{10} \left(6 A e \left(d^{10}+17 d^9 e x+136 d^8 e^2 x^2+680 d^7 e^3 x^3+2380 d^6 e^4 x^4+6188 d^5 e^5 x^5+\right.\right.$$
$$\left.12376 d^4 e^6 x^6+19448 d^3 e^7 x^7+24310 d^2 e^8 x^8+24310 d e^9 x^9+19448 e^{10} x^{10}\right)+$$
$$11 B \left(d^{11}+17 d^{10} e x+136 d^9 e^2 x^2+680 d^8 e^3 x^3+2380 d^7 e^4 x^4+6188 d^6 e^5 x^5+12376 d^5 e^6 x^6+\right.$$
$$\left.\left.\left.19448 d^4 e^7 x^7+24310 d^3 e^8 x^8+24310 d^2 e^9 x^9+19448 d e^{10} x^{10}+12376 e^{11} x^{11}\right)\right)\right)$$

Problem 1095: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^{10} (A+B x)}{(d+e x)^{19}}\, dx$$

Optimal (type 1, 385 leaves, 8 steps):

$$-\frac{(B d-A e)(a+b x)^{11}}{18 e (b d-a e)(d+e x)^{18}}+\frac{(11 b B d+7 A b e-18 a B e)(a+b x)^{11}}{306 e (b d-a e)^2 (d+e x)^{17}}+\frac{b (11 b B d+7 A b e-18 a B e)(a+b x)^{11}}{816 e (b d-a e)^3 (d+e x)^{16}}+\frac{b^2 (11 b B d+7 A b e-18 a B e)(a+b x)^{11}}{2448 e (b d-a e)^4 (d+e x)^{15}}+\frac{b^3 (11 b B d+7 A b e-18 a B e)(a+b x)^{11}}{8568 e (b d-a e)^5 (d+e x)^{14}}+\frac{b^4 (11 b B d+7 A b e-18 a B e)(a+b x)^{11}}{37128 e (b d-a e)^6 (d+e x)^{13}}+\frac{b^5 (11 b B d+7 A b e-18 a B e)(a+b x)^{11}}{222768 e (b d-a e)^7 (d+e x)^{12}}+\frac{b^6 (11 b B d+7 A b e-18 a B e)(a+b x)^{11}}{2450448 e (b d-a e)^8 (d+e x)^{11}}$$

Result (type 1, 1428 leaves):

$$-\frac{1}{2450448 e^{12} (d+e x)^{18}}\Big(8008 a^{10} e^{10} (17 A e+B (d+18 e x))+$$
$$10010 a^9 b e^9 (8 A e (d+18 e x)+B (d^2+18 d e x+153 e^2 x^2))+$$
$$9009 a^8 b^2 e^8 (5 A e (d^2+18 d e x+153 e^2 x^2)+B (d^3+18 d^2 e x+153 d e^2 x^2+816 e^3 x^3))+$$
$$3432 a^7 b^3 e^7 (7 A e (d^3+18 d^2 e x+153 d e^2 x^2+816 e^3 x^3)+$$
$$2 B (d^4+18 d^3 e x+153 d^2 e^2 x^2+816 d e^3 x^3+3060 e^4 x^4))+$$
$$924 a^6 b^4 e^6 (13 A e (d^4+18 d^3 e x+153 d^2 e^2 x^2+816 d e^3 x^3+3060 e^4 x^4)+$$
$$5 B (d^5+18 d^4 e x+153 d^3 e^2 x^2+816 d^2 e^3 x^3+3060 d e^4 x^4+8568 e^5 x^5))+$$
$$2772 a^5 b^5 e^5 (2 A e (d^5+18 d^4 e x+153 d^3 e^2 x^2+816 d^2 e^3 x^3+3060 d e^4 x^4+8568 e^5 x^5)+$$
$$B (d^6+18 d^5 e x+153 d^4 e^2 x^2+816 d^3 e^3 x^3+3060 d^2 e^4 x^4+8568 d e^5 x^5+18564 e^6 x^6))+210 a^4$$
$$b^6 e^4 (11 A e (d^6+18 d^5 e x+153 d^4 e^2 x^2+816 d^3 e^3 x^3+3060 d^2 e^4 x^4+8568 d e^5 x^5+18564 e^6 x^6)+$$
$$7 B (d^7+18 d^6 e x+153 d^5 e^2 x^2+816 d^4 e^3 x^3+$$
$$3060 d^3 e^4 x^4+8568 d^2 e^5 x^5+18564 d e^6 x^6+31824 e^7 x^7))+$$
$$168 a^3 b^7 e^3 (5 A e (d^7+18 d^6 e x+153 d^5 e^2 x^2+816 d^4 e^3 x^3+3060 d^3 e^4 x^4+8568 d^2 e^5 x^5+$$
$$18564 d e^6 x^6+31824 e^7 x^7)+4 B (d^8+18 d^7 e x+153 d^6 e^2 x^2+816 d^5 e^3 x^3+$$
$$3060 d^4 e^4 x^4+8568 d^3 e^5 x^5+18564 d^2 e^6 x^6+31824 d e^7 x^7+43758 e^8 x^8))+252 a^2 b^8 e^2$$
$$(A e (d^8+18 d^7 e x+153 d^6 e^2 x^2+816 d^5 e^3 x^3+3060 d^4 e^4 x^4+8568 d^3 e^5 x^5+18564 d^2 e^6 x^6+$$
$$31824 d e^7 x^7+43758 e^8 x^8)+B (d^9+18 d^8 e x+153 d^7 e^2 x^2+816 d^6 e^3 x^3+3060 d^5 e^4 x^4+$$
$$8568 d^4 e^5 x^5+18564 d^3 e^6 x^6+31824 d^2 e^7 x^7+43758 d e^8 x^8+48620 e^9 x^9))+$$
$$14 a b^9 e (4 A e (d^9+18 d^8 e x+153 d^7 e^2 x^2+816 d^6 e^3 x^3+3060 d^5 e^4 x^4+8568 d^4 e^5 x^5+$$
$$18564 d^3 e^6 x^6+31824 d^2 e^7 x^7+43758 d e^8 x^8+48620 e^9 x^9)+$$
$$5 B (d^{10}+18 d^9 e x+153 d^8 e^2 x^2+816 d^7 e^3 x^3+3060 d^6 e^4 x^4+8568 d^5 e^5 x^5+$$
$$18564 d^4 e^6 x^6+31824 d^3 e^7 x^7+43758 d^2 e^8 x^8+48620 d e^9 x^9+43758 e^{10} x^{10}))+$$
$$b^{10} (7 A e (d^{10}+18 d^9 e x+153 d^8 e^2 x^2+816 d^7 e^3 x^3+3060 d^6 e^4 x^4+8568 d^5 e^5 x^5+$$
$$18564 d^4 e^6 x^6+31824 d^3 e^7 x^7+43758 d^2 e^8 x^8+48620 d e^9 x^9+43758 e^{10} x^{10})+$$
$$11 B (d^{11}+18 d^{10} e x+153 d^9 e^2 x^2+816 d^8 e^3 x^3+3060 d^7 e^4 x^4+8568 d^6 e^5 x^5+18564 d^5 e^6 x^6+$$
$$31824 d^4 e^7 x^7+43758 d^3 e^8 x^8+48620 d^2 e^9 x^9+43758 d e^{10} x^{10}+31824 e^{11} x^{11}))\Big)$$

Problem 1096: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^{10} (A+B x)}{(d+e x)^{20}} \, dx$$

Optimal (type 1, 460 leaves, 2 steps):

$$\frac{(b d-a e)^{10} (B d-A e)}{19 e^{12} (d+e x)^{19}}-\frac{(b d-a e)^9 (11 b B d-10 A b e-a B e)}{18 e^{12} (d+e x)^{18}}+$$
$$\frac{5 b (b d-a e)^8 (11 b B d-9 A b e-2 a B e)}{17 e^{12} (d+e x)^{17}}-\frac{15 b^2 (b d-a e)^7 (11 b B d-8 A b e-3 a B e)}{16 e^{12} (d+e x)^{16}}+$$
$$\frac{2 b^3 (b d-a e)^6 (11 b B d-7 A b e-4 a B e)}{e^{12} (d+e x)^{15}}-\frac{3 b^4 (b d-a e)^5 (11 b B d-6 A b e-5 a B e)}{e^{12} (d+e x)^{14}}+$$
$$\frac{42 b^5 (b d-a e)^4 (11 b B d-5 A b e-6 a B e)}{13 e^{12} (d+e x)^{13}}-\frac{5 b^6 (b d-a e)^3 (11 b B d-4 A b e-7 a B e)}{2 e^{12} (d+e x)^{12}}+$$
$$\frac{15 b^7 (b d-a e)^2 (11 b B d-3 A b e-8 a B e)}{11 e^{12} (d+e x)^{11}}-\frac{b^8 (b d-a e) (11 b B d-2 A b e-9 a B e)}{2 e^{12} (d+e x)^{10}}+$$
$$\frac{b^9 (11 b B d-A b e-10 a B e)}{9 e^{12} (d+e x)^9}-\frac{b^{10} B}{8 e^{12} (d+e x)^8}$$

Result (type 1, 1433 leaves):

$$-\frac{1}{6651216\,e^{12}\,(d+e\,x)^{19}}\Big(19448\,a^{10}\,e^{10}\,(18\,A\,e+B\,(d+19\,e\,x))+$$
$$11440\,a^9\,b\,e^9\,(17\,A\,e\,(d+19\,e\,x)+2\,B\,(d^2+19\,d\,e\,x+171\,e^2\,x^2))+$$
$$6435\,a^8\,b^2\,e^8\,(16\,A\,e\,(d^2+19\,d\,e\,x+171\,e^2\,x^2)+3\,B\,(d^3+19\,d^2\,e\,x+171\,d\,e^2\,x^2+969\,e^3\,x^3))+$$
$$3432\,a^7\,b^3\,e^7\,(15\,A\,e\,(d^3+19\,d^2\,e\,x+171\,d\,e^2\,x^2+969\,e^3\,x^3)+$$
$$4\,B\,(d^4+19\,d^3\,e\,x+171\,d^2\,e^2\,x^2+969\,d\,e^3\,x^3+3876\,e^4\,x^4))+$$
$$1716\,a^6\,b^4\,e^6\,(14\,A\,e\,(d^4+19\,d^3\,e\,x+171\,d^2\,e^2\,x^2+969\,d\,e^3\,x^3+3876\,e^4\,x^4)+$$
$$5\,B\,(d^5+19\,d^4\,e\,x+171\,d^3\,e^2\,x^2+969\,d^2\,e^3\,x^3+3876\,d\,e^4\,x^4+11628\,e^5\,x^5))+$$
$$792\,a^5\,b^5\,e^5\,(13\,A\,e\,(d^5+19\,d^4\,e\,x+171\,d^3\,e^2\,x^2+969\,d^2\,e^3\,x^3+3876\,d\,e^4\,x^4+11628\,e^5\,x^5)+$$
$$6\,B\,(d^6+19\,d^5\,e\,x+171\,d^4\,e^2\,x^2+969\,d^3\,e^3\,x^3+3876\,d^2\,e^4\,x^4+11628\,d\,e^5\,x^5+27132\,e^6\,x^6))+$$
$$330\,a^4\,b^6\,e^4\,(12\,A\,e\,(d^6+19\,d^5\,e\,x+171\,d^4\,e^2\,x^2+969\,d^3\,e^3\,x^3+3876\,d^2\,e^4\,x^4+$$
$$11628\,d\,e^5\,x^5+27132\,e^6\,x^6)+7\,B\,(d^7+19\,d^6\,e\,x+171\,d^5\,e^2\,x^2+$$
$$969\,d^4\,e^3\,x^3+3876\,d^3\,e^4\,x^4+11628\,d^2\,e^5\,x^5+27132\,d\,e^6\,x^6+50388\,e^7\,x^7))+$$
$$120\,a^3\,b^7\,e^3\,(11\,A\,e\,(d^7+19\,d^6\,e\,x+171\,d^5\,e^2\,x^2+969\,d^4\,e^3\,x^3+3876\,d^3\,e^4\,x^4+11628\,d^2\,e^5\,x^5+$$
$$27132\,d\,e^6\,x^6+50388\,e^7\,x^7)+8\,B\,(d^8+19\,d^7\,e\,x+171\,d^6\,e^2\,x^2+969\,d^5\,e^3\,x^3+$$
$$3876\,d^4\,e^4\,x^4+11628\,d^3\,e^5\,x^5+27132\,d^2\,e^6\,x^6+50388\,d\,e^7\,x^7+75582\,e^8\,x^8))+$$
$$36\,a^2\,b^8\,e^2\,(10\,A\,e\,(d^8+19\,d^7\,e\,x+171\,d^6\,e^2\,x^2+969\,d^5\,e^3\,x^3+3876\,d^4\,e^4\,x^4+$$
$$11628\,d^3\,e^5\,x^5+27132\,d^2\,e^6\,x^6+50388\,d\,e^7\,x^7+75582\,e^8\,x^8)+$$
$$9\,B\,(d^9+19\,d^8\,e\,x+171\,d^7\,e^2\,x^2+969\,d^6\,e^3\,x^3+3876\,d^5\,e^4\,x^4+11628\,d^4\,e^5\,x^5+$$
$$27132\,d^3\,e^6\,x^6+50388\,d^2\,e^7\,x^7+75582\,d\,e^8\,x^8+92378\,e^9\,x^9))+$$
$$8\,a\,b^9\,e\,(9\,A\,e\,(d^9+19\,d^8\,e\,x+171\,d^7\,e^2\,x^2+969\,d^6\,e^3\,x^3+3876\,d^5\,e^4\,x^4+11628\,d^4\,e^5\,x^5+$$
$$27132\,d^3\,e^6\,x^6+50388\,d^2\,e^7\,x^7+75582\,d\,e^8\,x^8+92378\,e^9\,x^9)+$$
$$10\,B\,(d^{10}+19\,d^9\,e\,x+171\,d^8\,e^2\,x^2+969\,d^7\,e^3\,x^3+3876\,d^6\,e^4\,x^4+11628\,d^5\,e^5\,x^5+$$
$$27132\,d^4\,e^6\,x^6+50388\,d^3\,e^7\,x^7+75582\,d^2\,e^8\,x^8+92378\,d\,e^9\,x^9+92378\,e^{10}\,x^{10}))+$$
$$b^{10}\,(8\,A\,e\,(d^{10}+19\,d^9\,e\,x+171\,d^8\,e^2\,x^2+969\,d^7\,e^3\,x^3+3876\,d^6\,e^4\,x^4+11628\,d^5\,e^5\,x^5+$$
$$27132\,d^4\,e^6\,x^6+50388\,d^3\,e^7\,x^7+75582\,d^2\,e^8\,x^8+92378\,d\,e^9\,x^9+92378\,e^{10}\,x^{10})+$$
$$11\,B\,(d^{11}+19\,d^{10}\,e\,x+171\,d^9\,e^2\,x^2+969\,d^8\,e^3\,x^3+3876\,d^7\,e^4\,x^4+11628\,d^6\,e^5\,x^5+27132\,d^5\,e^6\,x^6+$$
$$50388\,d^4\,e^7\,x^7+75582\,d^3\,e^8\,x^8+92378\,d^2\,e^9\,x^9+92378\,d\,e^{10}\,x^{10}+75582\,e^{11}\,x^{11}))\Big)$$

Problem 1097: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b\,x)^{10}\,(A+B\,x)}{(d+e\,x)^{21}}\,dx$$

Optimal (type 1, 462 leaves, 2 steps):

$$\frac{(b d-a e)^{10} (B d-A e)}{20 e^{12} (d+e x)^{20}}-\frac{(b d-a e)^9 (11 b B d-10 A b e-a B e)}{19 e^{12} (d+e x)^{19}}+$$
$$\frac{5 b (b d-a e)^8 (11 b B d-9 A b e-2 a B e)}{18 e^{12} (d+e x)^{18}}-\frac{15 b^2 (b d-a e)^7 (11 b B d-8 A b e-3 a B e)}{17 e^{12} (d+e x)^{17}}+$$
$$\frac{15 b^3 (b d-a e)^6 (11 b B d-7 A b e-4 a B e)}{8 e^{12} (d+e x)^{16}}-\frac{14 b^4 (b d-a e)^5 (11 b B d-6 A b e-5 a B e)}{5 e^{12} (d+e x)^{15}}+$$
$$\frac{3 b^5 (b d-a e)^4 (11 b B d-5 A b e-6 a B e)}{e^{12} (d+e x)^{14}}-\frac{30 b^6 (b d-a e)^3 (11 b B d-4 A b e-7 a B e)}{13 e^{12} (d+e x)^{13}}+$$
$$\frac{5 b^7 (b d-a e)^2 (11 b B d-3 A b e-8 a B e)}{4 e^{12} (d+e x)^{12}}-\frac{5 b^8 (b d-a e) (11 b B d-2 A b e-9 a B e)}{11 e^{12} (d+e x)^{11}}+$$
$$\frac{b^9 (11 b B d-A b e-10 a B e)}{10 e^{12} (d+e x)^{10}}-\frac{b^{10} B}{9 e^{12} (d+e x)^9}$$

Result (type 1, 1428 leaves):

$$-\frac{1}{16628040 e^{12} (d+e x)^{20}} \Big(43758 a^{10} e^{10} (19 A e+B (d+20 e x))+$$
$$48620 a^9 b e^9 \left(9 A e (d+20 e x)+B \left(d^2+20 d e x+190 e^2 x^2\right)\right)+$$
$$12870 a^8 b^2 e^8 \left(17 A e \left(d^2+20 d e x+190 e^2 x^2\right)+3 B \left(d^3+20 d^2 e x+190 d e^2 x^2+1140 e^3 x^3\right)\right)+$$
$$25740 a^7 b^3 e^7 \Big(4 A e \left(d^3+20 d^2 e x+190 d e^2 x^2+1140 e^3 x^3\right)+$$
$$B \left(d^4+20 d^3 e x+190 d^2 e^2 x^2+1140 d e^3 x^3+4845 e^4 x^4\right)\Big)+$$
$$15015 a^6 b^4 e^6 \Big(3 A e \left(d^4+20 d^3 e x+190 d^2 e^2 x^2+1140 d e^3 x^3+4845 e^4 x^4\right)+$$
$$B \left(d^5+20 d^4 e x+190 d^3 e^2 x^2+1140 d^2 e^3 x^3+4845 d e^4 x^4+15504 e^5 x^5\right)\Big)+$$
$$2574 a^5 b^5 e^5 \Big(7 A e \left(d^5+20 d^4 e x+190 d^3 e^2 x^2+1140 d^2 e^3 x^3+4845 d e^4 x^4+15504 e^5 x^5\right)+$$
$$3 B \left(d^6+20 d^5 e x+190 d^4 e^2 x^2+1140 d^3 e^3 x^3+4845 d^2 e^4 x^4+15504 d e^5 x^5+38760 e^6 x^6\right)\Big)+$$
$$495 a^4 b^6 e^4 \Big(13 A e \big(d^6+20 d^5 e x+190 d^4 e^2 x^2+1140 d^3 e^3 x^3+4845 d^2 e^4 x^4+$$
$$15504 d e^5 x^5+38760 e^6 x^6\big)+7 B \big(d^7+20 d^6 e x+190 d^5 e^2 x^2+$$
$$1140 d^4 e^3 x^3+4845 d^3 e^4 x^4+15504 d^2 e^5 x^5+38760 d e^6 x^6+77520 e^7 x^7\big)\Big)+$$
$$660 a^3 b^7 e^3 \Big(3 A e \big(d^7+20 d^6 e x+190 d^5 e^2 x^2+1140 d^4 e^3 x^3+4845 d^3 e^4 x^4+15504 d^2 e^5 x^5+$$
$$38760 d e^6 x^6+77520 e^7 x^7\big)+2 B \big(d^8+20 d^7 e x+190 d^6 e^2 x^2+1140 d^5 e^3 x^3+$$
$$4845 d^4 e^4 x^4+15504 d^3 e^5 x^5+38760 d^2 e^6 x^6+77520 d e^7 x^7+125970 e^8 x^8\big)\Big)+$$
$$45 a^2 b^8 e^2 \Big(11 A e \big(d^8+20 d^7 e x+190 d^6 e^2 x^2+1140 d^5 e^3 x^3+4845 d^4 e^4 x^4+$$
$$15504 d^3 e^5 x^5+38760 d^2 e^6 x^6+77520 d e^7 x^7+125970 e^8 x^8\big)+$$
$$9 B \big(d^9+20 d^8 e x+190 d^7 e^2 x^2+1140 d^6 e^3 x^3+4845 d^5 e^4 x^4+15504 d^4 e^5 x^5+$$
$$38760 d^3 e^6 x^6+77520 d^2 e^7 x^7+125970 d e^8 x^8+167960 e^9 x^9\big)\Big)+$$
$$90 a b^9 e \Big(A e \big(d^9+20 d^8 e x+190 d^7 e^2 x^2+1140 d^6 e^3 x^3+4845 d^5 e^4 x^4+15504 d^4 e^5 x^5+$$
$$38760 d^3 e^6 x^6+77520 d^2 e^7 x^7+125970 d e^8 x^8+167960 e^9 x^9\big)+$$
$$B \big(d^{10}+20 d^9 e x+190 d^8 e^2 x^2+1140 d^7 e^3 x^3+4845 d^6 e^4 x^4+15504 d^5 e^5 x^5+$$
$$38760 d^4 e^6 x^6+77520 d^3 e^7 x^7+125970 d^2 e^8 x^8+167960 d e^9 x^9+184756 e^{10} x^{10}\big)\Big)+$$
$$b^{10} \Big(9 A e \big(d^{10}+20 d^9 e x+190 d^8 e^2 x^2+1140 d^7 e^3 x^3+4845 d^6 e^4 x^4+15504 d^5 e^5 x^5+$$
$$38760 d^4 e^6 x^6+77520 d^3 e^7 x^7+125970 d^2 e^8 x^8+167960 d e^9 x^9+184756 e^{10} x^{10}\big)+11 B$$
$$\big(d^{11}+20 d^{10} e x+190 d^9 e^2 x^2+1140 d^8 e^3 x^3+4845 d^7 e^4 x^4+15504 d^6 e^5 x^5+38760 d^5 e^6 x^6+$$
$$77520 d^4 e^7 x^7+125970 d^3 e^8 x^8+167960 d^2 e^9 x^9+184756 d e^{10} x^{10}+167960 e^{11} x^{11}\big)\Big)\Big)$$

Problem 1098: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^{10} (A+B x)}{(d+e x)^{22}} \, dx$$

Optimal (type 1, 464 leaves, 2 steps):

$$\frac{(b d-a e)^{10} (B d-A e)}{21 e^{12} (d+e x)^{21}}-\frac{(b d-a e)^9 (11 b B d-10 A b e-a B e)}{20 e^{12} (d+e x)^{20}}+\frac{5 b (b d-a e)^8 (11 b B d-9 A b e-2 a B e)}{19 e^{12} (d+e x)^{19}}-\frac{5 b^2 (b d-a e)^7 (11 b B d-8 A b e-3 a B e)}{6 e^{12} (d+e x)^{18}}+\frac{30 b^3 (b d-a e)^6 (11 b B d-7 A b e-4 a B e)}{17 e^{12} (d+e x)^{17}}-\frac{21 b^4 (b d-a e)^5 (11 b B d-6 A b e-5 a B e)}{8 e^{12} (d+e x)^{16}}+\frac{14 b^5 (b d-a e)^4 (11 b B d-5 A b e-6 a B e)}{5 e^{12} (d+e x)^{15}}-\frac{15 b^6 (b d-a e)^3 (11 b B d-4 A b e-7 a B e)}{7 e^{12} (d+e x)^{14}}+\frac{15 b^7 (b d-a e)^2 (11 b B d-3 A b e-8 a B e)}{13 e^{12} (d+e x)^{13}}-\frac{5 b^8 (b d-a e) (11 b B d-2 A b e-9 a B e)}{12 e^{12} (d+e x)^{12}}+\frac{b^9 (11 b B d-A b e-10 a B e)}{11 e^{12} (d+e x)^{11}}-\frac{b^{10} B}{10 e^{12} (d+e x)^{10}}$$

Result (type 1, 1431 leaves):

$$-\frac{1}{38\,798\,760\, e^{12}\, (d+e x)^{21}} \Big(92\,378\, a^{10} e^{10} \left(20 A e + B (d+21 e x)\right) +$$

$$48\,620\, a^9 b e^9 \left(19 A e (d+21 e x) + 2 B \left(d^2+21 d e x+210 e^2 x^2\right)\right) +$$

$$72\,930\, a^8 b^2 e^8 \left(6 A e \left(d^2+21 d e x+210 e^2 x^2\right) + B \left(d^3+21 d^2 e x+210 d e^2 x^2+1330 e^3 x^3\right)\right) +$$

$$11\,440\, a^7 b^3 e^7 \Big(17 A e \left(d^3+21 d^2 e x+210 d e^2 x^2+1330 e^3 x^3\right) + 4 B \left(d^4+21 d^3 e x+210 d^2 e^2 x^2+1330 d e^3 x^3+5985 e^4 x^4\right)\Big) +$$

$$5005\, a^6 b^4 e^6 \Big(16 A e \left(d^4+21 d^3 e x+210 d^2 e^2 x^2+1330 d e^3 x^3+5985 e^4 x^4\right) + 5 B \left(d^5+21 d^4 e x+210 d^3 e^2 x^2+1330 d^2 e^3 x^3+5985 d e^4 x^4+20\,349 e^5 x^5\right)\Big) +$$

$$6006\, a^5 b^5 e^5 \Big(5 A e \left(d^5+21 d^4 e x+210 d^3 e^2 x^2+1330 d^2 e^3 x^3+5985 d e^4 x^4+20\,349 e^5 x^5\right) + 2 B \left(d^6+21 d^5 e x+210 d^4 e^2 x^2+1330 d^3 e^3 x^3+5985 d^2 e^4 x^4+20\,349 d e^5 x^5+54\,264 e^6 x^6\right)\Big) +$$

$$5005\, a^4 b^6 e^4 \Big(2 A e \left(d^6+21 d^5 e x+210 d^4 e^2 x^2+1330 d^3 e^3 x^3+5985 d^2 e^4 x^4+20\,349 d e^5 x^5+54\,264 e^6 x^6\right) + B \left(d^7+21 d^6 e x+210 d^5 e^2 x^2+1330 d^4 e^3 x^3+5985 d^3 e^4 x^4+20\,349 d^2 e^5 x^5+54\,264 d e^6 x^6+116\,280 e^7 x^7\right)\Big) +$$

$$220\, a^3 b^7 e^3 \Big(13 A e \left(d^7+21 d^6 e x+210 d^5 e^2 x^2+1330 d^4 e^3 x^3+5985 d^3 e^4 x^4+20\,349 d^2 e^5 x^5+54\,264 d e^6 x^6+116\,280 e^7 x^7\right) + 8 B \left(d^8+21 d^7 e x+210 d^6 e^2 x^2+1330 d^5 e^3 x^3+5985 d^4 e^4 x^4+20\,349 d^3 e^5 x^5+54\,264 d^2 e^6 x^6+116\,280 d e^7 x^7+203\,490 e^8 x^8\right)\Big) +$$

$$165\, a^2 b^8 e^2 \Big(4 A e \left(d^8+21 d^7 e x+210 d^6 e^2 x^2+1330 d^5 e^3 x^3+5985 d^4 e^4 x^4+20\,349 d^3 e^5 x^5+54\,264 d^2 e^6 x^6+116\,280 d e^7 x^7+203\,490 e^8 x^8\right) + 3 B \left(d^9+21 d^8 e x+210 d^7 e^2 x^2+1330 d^6 e^3 x^3+5985 d^5 e^4 x^4+20\,349 d^4 e^5 x^5+54\,264 d^3 e^6 x^6+116\,280 d^2 e^7 x^7+203\,490 d e^8 x^8+293\,930 e^9 x^9\right)\Big) +$$

$$10\, a b^9 e \Big(11 A e \left(d^9+21 d^8 e x+210 d^7 e^2 x^2+1330 d^6 e^3 x^3+5985 d^5 e^4 x^4+20\,349 d^4 e^5 x^5+54\,264 d^3 e^6 x^6+116\,280 d^2 e^7 x^7+203\,490 d e^8 x^8+293\,930 e^9 x^9\right) + 10 B \left(d^{10}+21 d^9 e x+210 d^8 e^2 x^2+1330 d^7 e^3 x^3+5985 d^6 e^4 x^4+20\,349 d^5 e^5 x^5+54\,264 d^4 e^6 x^6+116\,280 d^3 e^7 x^7+203\,490 d^2 e^8 x^8+293\,930 d e^9 x^9+352\,716 e^{10} x^{10}\right)\Big) +$$

$$b^{10} \Big(10 A e \left(d^{10}+21 d^9 e x+210 d^8 e^2 x^2+1330 d^7 e^3 x^3+5985 d^6 e^4 x^4+20\,349 d^5 e^5 x^5+54\,264 d^4 e^6 x^6+116\,280 d^3 e^7 x^7+203\,490 d^2 e^8 x^8+293\,930 d e^9 x^9+352\,716 e^{10} x^{10}\right) + 11 B \left(d^{11}+21 d^{10} e x+210 d^9 e^2 x^2+1330 d^8 e^3 x^3+5985 d^7 e^4 x^4+20\,349 d^6 e^5 x^5+54\,264 d^5 e^6 x^6+116\,280 d^4 e^7 x^7+203\,490 d^3 e^8 x^8+293\,930 d^2 e^9 x^9+352\,716 d e^{10} x^{10}+352\,716 e^{11} x^{11}\right)\Big)\Big)$$

Problem 1110: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B x)\,(d+e x)^5}{(a+b x)^2}\, dx$$

Optimal (type 3, 227 leaves, 2 steps):

$$\frac{5 e (b d-a e)^3 (b B d+2 A b e-3 a B e) x}{b^6} - \frac{(A b-a B) (b d-a e)^5}{b^7 (a+b x)} + \frac{5 e^2 (b d-a e)^2 (b B d+A b e-2 a B e) (a+b x)^2}{b^7} +$$

$$\frac{5 e^3 (b d-a e) (2 b B d+A b e-3 a B e) (a+b x)^3}{3 b^7} + \frac{e^4 (5 b B d+A b e-6 a B e) (a+b x)^4}{4 b^7} +$$

$$\frac{B e^5 (a+b x)^5}{5 b^7} + \frac{(b d-a e)^4 (b B d+5 A b e-6 a B e) \text{Log}[a+b x]}{b^7}$$

Result (type 3, 500 leaves):

$$\frac{1}{60\,b^7\,(a+b\,x)}\Big(B\,\big(-60\,a^6\,e^5+300\,a^5\,b\,e^4\,(d+e\,x)+60\,a^4\,b^2\,e^3\,(-10\,d^2-20\,d\,e\,x+3\,e^2\,x^2)+30\,a^3\,b^3\,e^2\,(20\,d^3+60\,d^2\,e\,x-25\,d\,e^2\,x^2-2\,e^3\,x^3)+10\,a^2\,b^4\,e\,(-30\,d^4-120\,d^3\,e\,x+120\,d^2\,e^2\,x^2+25\,d\,e^3\,x^3+3\,e^4\,x^4)+b^6\,e\,x^2\,(300\,d^4+300\,d^3\,e\,x+200\,d^2\,e^2\,x^2+75\,d\,e^3\,x^3+12\,e^4\,x^4)+a\,b^5\,(60\,d^5+300\,d^4\,e\,x-900\,d^3\,e^2\,x^2-400\,d^2\,e^3\,x^3-125\,d\,e^4\,x^4-18\,e^5\,x^5)\big)-5\,A\,b\,\big(-12\,a^5\,e^5+12\,a^4\,b\,e^4\,(5\,d+4\,e\,x)+30\,a^3\,b^2\,e^3\,(-4\,d^2-6\,d\,e\,x+e^2\,x^2)-10\,a^2\,b^3\,e^2\,(-12\,d^3-24\,d^2\,e\,x+12\,d\,e^2\,x^2+e^3\,x^3)+5\,a\,b^4\,e\,(-12\,d^4-24\,d^3\,e\,x+36\,d^2\,e^2\,x^2+8\,d\,e^3\,x^3+e^4\,x^4)+b^5\,(12\,d^5-120\,d^3\,e^2\,x^2-60\,d^2\,e^3\,x^3-20\,d\,e^4\,x^4-3\,e^5\,x^5)\big)+60\,(b\,d-a\,e)^4\,(b\,B\,d+5\,A\,b\,e-6\,a\,B\,e)\,(a+b\,x)\,\mathrm{Log}[a+b\,x]\Big)$$

Problem 1180: Result more than twice size of optimal antiderivative.

$$\int (5-2\,x)^6\,(2+3\,x)^3\,(-16+33\,x)\,dx$$

Optimal (type 1, 18 leaves, 1 step):

$$-\frac{1}{2}\,(5-2\,x)^7\,(2+3\,x)^4$$

Result (type 1, 56 leaves):

$$-2\,000\,000\,x-37\,500\,x^2+3\,987\,500\,x^3-\frac{98\,125\,x^4}{2}-3\,816\,225\,x^5+1\,497\,230\,x^6+1\,235\,404\,x^7-1\,256\,376\,x^8+452\,304\,x^9-76\,896\,x^{10}+5184\,x^{11}$$

Problem 2505: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{\sqrt{a+b\,x}\,(e+f\,x)\,\sqrt{2\,b\,e-a\,f+b\,f\,x}}\,dx$$

Optimal (type 3, 59 leaves, 2 steps):

$$\frac{\mathrm{ArcTan}\left[\frac{\sqrt{f}\,\sqrt{a+b\,x}\,\sqrt{2\,b\,e-a\,f+b\,f\,x}}{b\,e-a\,f}\right]}{\sqrt{f}\,(b\,e-a\,f)}$$

Result (type 3, 81 leaves):

$$\frac{i\,\mathrm{Log}\left[-\frac{2\,i\,\sqrt{f}\,(-b\,e+a\,f)}{e+f\,x}+\frac{2\,f\,\sqrt{a+b\,x}\,\sqrt{2\,b\,e-a\,f+b\,f\,x}}{e+f\,x}\right]}{\sqrt{f}\,(b\,e-a\,f)}$$

Problem 2625: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{a+b\,x}\,\sqrt{c+\frac{b\,(-1+c)\,x}{a}}\,\sqrt{e+\frac{b\,(-1+e)\,x}{a}}}\,dx$$

Optimal (type 4, 58 leaves, 1 step):

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

Result (type 4, 129 leaves):

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

Problem 2628: Result more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{e+\frac{b\,(-1+e)\,x}{a}}}{\sqrt{a+b\,x}\ \sqrt{c+\frac{b\,(-1+c)\,x}{a}}}\,dx$$

Optimal (type 4, 58 leaves, 1 step):

$$\frac{2\sqrt{a}\ \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{1-c}\ \sqrt{a+b\,x}}{\sqrt{a}}\right],\ \frac{1-e}{1-c}\right]}{b\,\sqrt{1-c}}$$

Result (type 4, 191 leaves):

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

Problem 2629: Result more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{c+d\,x}}{\sqrt{a+b\,x}\,\sqrt{e+\frac{b\,(-1+e)\,x}{a}}}\,dx$$

Optimal (type 4, 96 leaves, 2 steps):

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

Result (type 4, 200 leaves):

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

Problem 2630: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\sqrt{a+b x}}{\sqrt{c+\frac{b(-1+c) x}{a}} \sqrt{e+\frac{b(-1+e) x}{a}}} \, dx$$

Optimal (type 4, 162 leaves, 2 steps):

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

Result (type 4, 103 leaves):

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

Problem 2662: Result more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{1-2 x}}{\sqrt{-3-5 x} \sqrt{2+3 x}} \, dx$$

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

$$\frac{2}{3} \sqrt{\frac{7}{5}} \text{EllipticE}\left[\text{ArcSin}\left[\sqrt{5} \sqrt{2+3 x}\right], \frac{2}{35}\right]$$

Result (type 4, 109 leaves):

$$-\left(\left(2\left(\frac{3\left(-3+x+10x^2\right)}{\sqrt{2+3x}}+\sqrt{35}\sqrt{\frac{-1+2x}{2+3x}}\left(2+3x\right)\sqrt{\frac{3+5x}{2+3x}}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{7}{2}}}{\sqrt{2+3x}}\right],\frac{2}{35}\right]\right)\right)\Big/\left(15\sqrt{-3-5x}\sqrt{1-2x}\right)\right)$$

Problem 2666: Result more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{1-2x}}{\sqrt{2+3x}\sqrt{3+5x}}\,dx$$

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

$$\frac{2\sqrt{\frac{7}{5}}\sqrt{-3-5x}\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{5}\sqrt{2+3x}\right],\frac{2}{35}\right]}{3\sqrt{3+5x}}$$

Result (type 4, 121 leaves):

$$\left(2\sqrt{1-2x}\left(5\sqrt{3+5x}\left(-2+x+6x^2\right)+\sqrt{33}\sqrt{\frac{-1+2x}{3+5x}}\sqrt{\frac{2+3x}{3+5x}}\left(3+5x\right)^2\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{11}{2}}}{\sqrt{3+5x}}\right],-\frac{2}{33}\right]\right)\right)\Big/\left(15\sqrt{2+3x}\left(-3+x+10x^2\right)\right)$$

Problem 2807: Result unnecessarily involves imaginary or complex numbers.

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

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

$$-\frac{2\sqrt{1-2x}\sqrt{3+5x}}{7\sqrt{2+3x}}+\frac{2\sqrt{\frac{5}{7}}\sqrt{-3-5x}\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{5}\sqrt{2+3x}\right],\frac{2}{35}\right]}{3\sqrt{3+5x}}$$

Result (type 4, 70 leaves):

$$\frac{1}{42+63\,x}\left(-6\sqrt{1-2\,x}\,\sqrt{2+3\,x}\,\sqrt{3+5\,x}-2\,\mathrm{i}\,\sqrt{33}\,(2+3\,x)\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{9+15\,x}\right],-\frac{2}{33}\right]\right)$$

Problem 2829: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{1+x}\,\sqrt{2+x}\,\sqrt{3+x}}\,dx$$

Optimal (type 4, 12 leaves, 1 step):

$$-2\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{3+x}}\right],2\right]$$

Result (type 4, 55 leaves):

$$\frac{2\,\mathrm{i}\,\sqrt{1+\frac{1}{1+x}}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{1}{\sqrt{1+x}}\right],2\right]}{\sqrt{\frac{2+x}{3+x}}\,\sqrt{\frac{3+x}{1+x}}}$$

Problem 2830: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 16 leaves, 1 step):

$$2\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{1+x}}{2}\right],-4\right]$$

Result (type 4, 74 leaves):

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

Problem 2831: Result more than twice size of optimal antiderivative.

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

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

$$\sqrt{2}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{1+x}}{\sqrt{3}}\right],-\frac{3}{2}\right]$$

Result (type 4, 67 leaves):

$$-\frac{2\,(3+x)\,\sqrt{1-\frac{5}{3+x}}\,\sqrt{1-\frac{2}{3+x}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{5}}{\sqrt{3+x}}\right],\frac{2}{5}\right]}{\sqrt{-50+35\,(3+x)-5\,(3+x)^2}}$$

Problem 2832: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 18 leaves, 1 step):

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{1+x}}{\sqrt{3}}\right],\frac{3}{4}\right]$$

Result (type 4, 65 leaves):

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

Problem 2833: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 18 leaves, 1 step):

$$2\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{2+x}}{\sqrt{3}}\right],-3\right]$$

Result (type 4, 78 leaves):

$$-\frac{2\,i\,\sqrt{-(-1+x)\,(2+x)}\ \sqrt{3+x}\ \text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{3}}{\sqrt{-1+x}}\right],\frac{4}{3}\right]}{\sqrt{3+\frac{9}{-1+x}}\,(-1+x)^{3/2}\,\sqrt{\frac{3+x}{-1+x}}}$$

Problem 2834: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 25 leaves, 1 step):

$$\frac{2\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{2+x}}{\sqrt{3}}\right],\frac{3}{5}\right]}{\sqrt{5}}$$

Result (type 4, 68 leaves):

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

Problem 2835: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 23 leaves, 1 step):

$$\frac{2\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{3+x}}{2}\right],\frac{4}{5}\right]}{\sqrt{5}}$$

Result (type 4, 65 leaves):

$$-\frac{2\,i\sqrt{1-\frac{4}{1-x}}\,\sqrt{1+\frac{1}{1-x}}\,(1-x)\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{1}{\sqrt{1-x}}\right],-4\right]}{\sqrt{-(-2+x)\,(3+x)}}$$

Problem 2836: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{1}{\sqrt{1-x}\,\sqrt{2-x}\,\sqrt{3-x}}\,dx$$

Optimal (type 4, 14 leaves, 1 step):

$$2\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{3-x}}\right],2\right]$$

Result (type 4, 67 leaves):

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

Problem 2837: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 12 leaves, 1 step):

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

Result (type 4, 59 leaves):

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

Problem 2839: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 41 leaves, 2 steps):

$$-\frac{2\,\sqrt{2+x}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{\frac{2}{3}+\frac{x}{3}}}\right],\frac{5}{3}\right]}{\sqrt{3}\,\sqrt{-2-x}}$$

Result (type 4, 72 leaves):

$$\frac{2\,i\,\sqrt{\frac{-3+x}{-1+x}}\,\sqrt{\frac{-1+x}{2+x}}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{3}}{\sqrt{-2-x}}\right],\frac{5}{3}\right]}{\sqrt{3}\,\sqrt{\frac{-3+x}{2+x}}}$$

Problem 2841: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 41 leaves, 2 steps):

$$-\frac{2\,\sqrt{1+x}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{\frac{1}{3}+\frac{x}{3}}}\right],\frac{4}{3}\right]}{\sqrt{3}\,\sqrt{-1-x}}$$

Result (type 4, 72 leaves):

$$\frac{2\,i\,\sqrt{\frac{-3+x}{-2+x}}\,\sqrt{\frac{-2+x}{1+x}}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{3}}{\sqrt{-1-x}}\right],\frac{4}{3}\right]}{\sqrt{3}\,\sqrt{\frac{-3+x}{1+x}}}$$

Problem 2842: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 57 leaves, 3 steps):

$$-\frac{2\sqrt{1+x}\,\sqrt{3+x}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{\frac{3}{5}+\frac{x}{5}}}\right],\frac{2}{5}\right]}{\sqrt{5}\,\sqrt{-3-x}\,\sqrt{-1-x}}$$

Result (type 4, 75 leaves):

$$\frac{2\,i\,\sqrt{1+\frac{3}{-2+x}}\,\sqrt{1+\frac{5}{-2+x}}\,(-2+x)\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{3}}{\sqrt{-2+x}}\right],\frac{5}{3}\right]}{\sqrt{-15-3\,(-2+x)}\,\sqrt{-1-x}}$$

Problem 2843: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 57 leaves, 3 steps):

$$-\frac{2\sqrt{1+x}\,\sqrt{2+x}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{\frac{2}{5}+\frac{x}{5}}}\right],\frac{1}{5}\right]}{\sqrt{5}\,\sqrt{-2-x}\,\sqrt{-1-x}}$$

Result (type 4, 69 leaves):

$$\frac{i\,\sqrt{1+\frac{4}{-3+x}}\,\sqrt{1+\frac{5}{-3+x}}\,(-3+x)\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{2}{\sqrt{-3+x}}\right],\frac{5}{4}\right]}{\sqrt{-2-x}\,\sqrt{-1-x}}$$

Problem 2844: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{-3-x}\,\sqrt{-2-x}\,\sqrt{-1-x}}\,dx$$

Optimal (type 4, 14 leaves, 1 step):

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

Result (type 4, 67 leaves):

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

Problem 2845: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 204 leaves, 4 steps):

$$-\frac{2\,b\,\sqrt{c+d\,x}\,\sqrt{e+f\,x}}{(b\,c-a\,d)\,(b\,e-a\,f)\,\sqrt{a+b\,x}}+\left(2\,\sqrt{f}\,\sqrt{-d\,e+c\,f}\,\sqrt{a+b\,x}\,\sqrt{\frac{d\,(e+f\,x)}{d\,e-c\,f}}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{f}\,\sqrt{c+d\,x}}{\sqrt{-d\,e+c\,f}}\right],-\frac{b\,(d\,e-c\,f)}{(b\,c-a\,d)\,f}\right]\right)\Big/\left((b\,c-a\,d)\,(b\,e-a\,f)\,\sqrt{-\frac{d\,(a+b\,x)}{b\,c-a\,d}}\,\sqrt{e+f\,x}\right)$$

Result (type 4, 201 leaves):

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

Problem 2846: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 437 leaves, 8 steps):

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

Result (type 4, 449 leaves):

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

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

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

$$2\,\mathrm{i}\,(b\,c-a\,d)\,f\,(b\,d\,e+b\,c\,f-2\,a\,d\,f)\,(a+b\,x)^{3/2}\,\sqrt{\frac{b\,(c+d\,x)}{d\,(a+b\,x)}}\,\sqrt{\frac{b\,(e+f\,x)}{f\,(a+b\,x)}}\,\text{EllipticE}\Big[$$

$$\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{-a+\frac{b\,c}{d}}}{\sqrt{a+b\,x}}\Big],\,\frac{b\,d\,e-a\,d\,f}{b\,c\,f-a\,d\,f}\Big]-\mathrm{i}\,(b\,c-a\,d)\,f\,(b\,d\,e+2\,b\,c\,f-3\,a\,d\,f)\,(a+b\,x)^{3/2}$$

$$\left.\left.\sqrt{\frac{b\,(c+d\,x)}{d\,(a+b\,x)}}\,\sqrt{\frac{b\,(e+f\,x)}{f\,(a+b\,x)}}\,\text{EllipticF}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{-a+\frac{b\,c}{d}}}{\sqrt{a+b\,x}}\Big],\,\frac{b\,d\,e-a\,d\,f}{b\,c\,f-a\,d\,f}\Big]\right)\right)$$

Problem 2850: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{2+3\,x}}{\sqrt{1-2\,x}\,\sqrt{3+5\,x}}\,dx$$

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

$$-\sqrt{\frac{7}{5}}\,\text{EllipticE}\Big[\text{ArcSin}\Big[\sqrt{\frac{5}{11}}\,\sqrt{1-2\,x}\Big],\,\frac{33}{35}\Big]$$

Result (type 4, 129 leaves):

$$\left(\sqrt{2+3x}\,\sqrt{\frac{-1+2x}{3+5x}}\left(5\sqrt{\frac{-1+2x}{3+5x}}\,\sqrt{\frac{2+3x}{3+5x}}\,\sqrt{3+5x}+i\sqrt{2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{1}{\sqrt{9+15x}}\right],-\frac{33}{2}\right]\right)\right)\Big/\left(5\sqrt{1-2x}\,\sqrt{\frac{2+3x}{3+5x}}\right)$$

Problem 2851: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{1-2x}\,\sqrt{2+3x}\,\sqrt{3+5x}}\,dx$$

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

$$-\frac{2\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\frac{3}{7}}\,\sqrt{1-2x}\right],\frac{35}{33}\right]}{\sqrt{33}}$$

Result (type 4, 74 leaves):

$$\frac{i\sqrt{2+3x}\,\sqrt{\frac{-2+4x}{3+5x}}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{1}{\sqrt{9+15x}}\right],-\frac{33}{2}\right]}{\sqrt{1-2x}\,\sqrt{\frac{2+3x}{3+5x}}}$$

Problem 2858: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\sqrt{2+3x}}{\sqrt{1-2x}\,(3+5x)^{3/2}}\,dx$$

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

$$-\frac{2\sqrt{1-2x}\,\sqrt{2+3x}}{11\sqrt{3+5x}}+\frac{2\sqrt{\frac{7}{5}}\,\sqrt{-3-5x}\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{5}\,\sqrt{2+3x}\right],\frac{2}{35}\right]}{11\sqrt{3+5x}}$$

Result (type 4, 61 leaves):

$$\frac{2}{55}\left(-\frac{5\sqrt{1-2x}\,\sqrt{2+3x}}{\sqrt{3+5x}}-i\sqrt{33}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{9+15x}\right],-\frac{2}{33}\right]\right)$$

Problem 2872: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 86 leaves, 3 steps):

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

Result (type 4, 120 leaves):

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

Problem 2873: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{4-x}\ \sqrt{5-x}\ \sqrt{-3+x}}\, dx$$

Optimal (type 4, 18 leaves, 1 step):

$$\sqrt{2}\ \text{EllipticF}\left[\text{ArcSin}\left[\sqrt{-3+x}\right], \frac{1}{2}\right]$$

Result (type 4, 46 leaves):

$$\frac{2\sqrt{-15+8x-x^2}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{4-x}}\right], -1\right]}{\sqrt{1-\frac{1}{(-4+x)^2}}\ (-4+x)}$$

Problem 2874: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{4-x}\ \sqrt{(5-x)\ (-3+x)}}\, dx$$

Optimal (type 4, 14 leaves, 3 steps):

$$-2\, \text{EllipticF}\left[\text{ArcSin}\left[\sqrt{4-x}\right], -1\right]$$

Result (type 4, 46 leaves):

$$\frac{2\sqrt{-15+8x-x^2}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{4-x}}\right],-1\right]}{\sqrt{1-\frac{1}{(-4+x)^2}}\ (-4+x)}$$

Problem 2875: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{4-x}\ \sqrt{-15+8x-x^2}}\, dx$$

Optimal (type 4, 14 leaves, 2 steps):

$$-2\ \text{EllipticF}\left[\text{ArcSin}\left[\sqrt{4-x}\right],-1\right]$$

Result (type 4, 44 leaves):

$$-\frac{2\sqrt{1-\frac{1}{(-4+x)^2}}\ (-4+x)\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{4-x}}\right],-1\right]}{\sqrt{-15+8x-x^2}}$$

Problem 2876: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{6-x}\ \sqrt{-2+x}\ \sqrt{-1+x}}\, dx$$

Optimal (type 4, 16 leaves, 1 step):

$$2\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-2+x}}{2}\right],-4\right]$$

Result (type 4, 74 leaves):

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

Problem 2877: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{(6-x)\ (-2+x)}\ \sqrt{-1+x}}\, dx$$

Optimal (type 4, 25 leaves, 3 steps):

$$-\frac{2\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{6-x}}{2}\right],\frac{4}{5}\right]}{\sqrt{5}}$$

Result (type 4, 74 leaves):

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

Problem 2878: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{-1+x} \sqrt{-12+8x-x^2}} \, dx$$

Optimal (type 4, 25 leaves, 2 steps):

$$-\frac{2 \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{6-x}}{2}\right], \frac{4}{5}\right]}{\sqrt{5}}$$

Result (type 4, 68 leaves):

$$-\frac{2 \sqrt{\frac{-6+x}{-1+x}} \sqrt{\frac{-2+x}{-1+x}} (-1+x) \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{5}}{\sqrt{-1+x}}\right], \frac{1}{5}\right]}{\sqrt{5} \sqrt{-12+8x-x^2}}$$

Problem 2910: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{(1-2x)^{3/2} \sqrt{2+3x} \sqrt{3+5x}} \, dx$$

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

$$\frac{4 \sqrt{2+3x} \sqrt{3+5x}}{77 \sqrt{1-2x}} + \frac{2 \sqrt{\frac{5}{7}} \sqrt{-3-5x} \text{EllipticE}\left[\text{ArcSin}\left[\sqrt{5} \sqrt{2+3x}\right], \frac{2}{35}\right]}{11 \sqrt{3+5x}}$$

Result (type 4, 61 leaves):

$$\frac{2}{77} \left(\frac{2 \sqrt{2+3x} \sqrt{3+5x}}{\sqrt{1-2x}} - \text{i} \sqrt{33} \text{EllipticE}\left[\text{i} \text{ArcSinh}\left[\sqrt{9+15x}\right], -\frac{2}{33}\right]\right)$$

Problem 2989: Result unnecessarily involves higher level functions.

$$\int (a+bx)^{1/3} (c+dx)^{2/3} (e+fx)^2 \, dx$$

Optimal (type 3, 571 leaves, 5 steps):

$$\frac{1}{81 b^3 d^3}(b c-a d)\left(10 a^2 d^2 f^2-10 a b d f(3 d e-c f)+b^2\left(27 d^2 e^2-24 c d e f+7 c^2 f^2\right)\right)(a+b x)^{1/3}(c+d x)^{2/3}+\frac{1}{54 b^3 d^2}\left(10 a^2 d^2 f^2-10 a b d f(3 d e-c f)+b^2\left(27 d^2 e^2-24 c d e f+7 c^2 f^2\right)\right)(a+b x)^{4/3}(c+d x)^{2/3}+\frac{f(15 b d e-7 b c f-8 a d f)(a+b x)^{4/3}(c+d x)^{5/3}}{36 b^2 d^2}+\frac{f(a+b x)^{4/3}(c+d x)^{5/3}(e+f x)}{4 b d}+\frac{1}{81 \sqrt{3} b^{11/3} d^{10/3}}(b c-a d)^2\left(10 a^2 d^2 f^2-10 a b d f(3 d e-c f)+b^2\left(27 d^2 e^2-24 c d e f+7 c^2 f^2\right)\right) \text{ArcTan}\left[\frac{1}{\sqrt{3}}+\frac{2 b^{1/3}(c+d x)^{1/3}}{\sqrt{3} d^{1/3}(a+b x)^{1/3}}\right]+\frac{1}{486 b^{11/3} d^{10/3}}(b c-a d)^2\left(10 a^2 d^2 f^2-10 a b d f(3 d e-c f)+b^2\left(27 d^2 e^2-24 c d e f+7 c^2 f^2\right)\right) \text{Log}[a+b x]+\frac{1}{162 b^{11/3} d^{10/3}}(b c-a d)^2\left(10 a^2 d^2 f^2-10 a b d f(3 d e-c f)+b^2\left(27 d^2 e^2-24 c d e f+7 c^2 f^2\right)\right) \text{Log}\left[-1+\frac{b^{1/3}(c+d x)^{1/3}}{d^{1/3}(a+b x)^{1/3}}\right]$$

Result (type 5, 311 leaves) :

$$\frac{1}{324 b^3 d^4 (a+b x)^{2/3}}(c+d x)^{2/3}\left(d(a+b x)\left(20 a^3 d^3 f^2-12 a^2 b d^2 f(5 d e+c f+d f x)+3 a b^2 d\left(-3 c^2 f^2+2 c d f(8 e+f x)+3 d^2\left(6 e^2+4 e f x+f^2 x^2\right)\right)+b^3\left(28 c^3 f^2-3 c^2 d f(32 e+7 f x)+18 c d^2\left(6 e^2+4 e f x+f^2 x^2\right)+27 d^3 x\left(6 e^2+8 e f x+3 f^2 x^2\right)\right)\right)-2(b c-a d)^2\left(10 a^2 d^2 f^2+10 a b d f(-3 d e+c f)+b^2\left(27 d^2 e^2-24 c d e f+7 c^2 f^2\right)\right)\left(\frac{d(a+b x)}{-b c+a d}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{2}{3}, \frac{2}{3}, \frac{5}{3}, \frac{b(c+d x)}{b c-a d}\right]\right)$$

Problem 2990: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 331 leaves, 4 steps) :

$$\frac{(b c-a d)\,(9 b d e-4 b c f-5 a d f)\,(a+b x)^{1/3}\,(c+d x)^{2/3}}{27 b^2 d^2}+\frac{(9 b d e-4 b c f-5 a d f)\,(a+b x)^{4/3}\,(c+d x)^{2/3}}{18 b^2 d}+\frac{f\,(a+b x)^{4/3}\,(c+d x)^{5/3}}{3 b d}+\frac{(b c-a d)^2\,(9 b d e-4 b c f-5 a d f)\,\text{ArcTan}\left[\frac{1}{\sqrt{3}}+\frac{2 b^{1/3}\,(c+d x)^{1/3}}{\sqrt{3}\,d^{1/3}\,(a+b x)^{1/3}}\right]}{27 \sqrt{3}\,b^{8/3}\,d^{7/3}}+\frac{(b c-a d)^2\,(9 b d e-4 b c f-5 a d f)\,\text{Log}[a+b x]}{162\,b^{8/3}\,d^{7/3}}+\frac{(b c-a d)^2\,(9 b d e-4 b c f-5 a d f)\,\text{Log}\left[-1+\frac{b^{1/3}\,(c+d x)^{1/3}}{d^{1/3}\,(a+b x)^{1/3}}\right]}{54\,b^{8/3}\,d^{7/3}}$$

Result (type 5, 175 leaves) :

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

Problem 2991: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 219 leaves, 3 steps) :

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

Result (type 5, 109 leaves) :

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

Problem 2992: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 409 leaves, 4 steps):

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

Result (type 6, 541 leaves):

$$\frac{1}{5 f (a+b x)^{2/3}} (c+d x)^{2/3} \Bigg(5 (a+b x)-\frac{1}{d^2 (e+f x)} 4 (b c-a d) \Bigg(-\Bigg(\Bigg(5 b f (-d e+c f) (c+d x) \operatorname{AppellF1}\left[1,\frac{2}{3},1,2,\frac{b c-a d}{b c+b d x},\frac{-d e+c f}{f (c+d x)}\right]\Bigg) \Big/ \Bigg(6 b f (c+d x) \operatorname{AppellF1}\left[1,\frac{2}{3},1,2,\frac{b c-a d}{b c+b d x},\frac{-d e+c f}{f (c+d x)}\right]+b (-3 d e+3 c f) \operatorname{AppellF1}\left[2,\frac{2}{3},2,3,\frac{b c-a d}{b c+b d x},\frac{-d e+c f}{f (c+d x)}\right]+2 (b c-a d) f \operatorname{AppellF1}\left[2,\frac{5}{3},1,3,\frac{b c-a d}{b c+b d x},\frac{-d e+c f}{f (c+d x)}\right]\Bigg)\Bigg)-\Bigg(2 (d e-c f) (3 b d e-2 b c f-a d f) \operatorname{AppellF1}\left[\frac{5}{3},\frac{2}{3},1,\frac{8}{3},\frac{b (c+d x)}{b c-a d},\frac{f (c+d x)}{-d e+c f}\right]\Bigg) \Big/ \Bigg(\frac{1}{c+d x} 8 (b c-a d) (-d e+c f) \operatorname{AppellF1}\left[\frac{5}{3},\frac{2}{3},1,\frac{8}{3},\frac{b (c+d x)}{b c-a d},\frac{f (c+d x)}{-d e+c f}\right]+3 (b c-a d) f \operatorname{AppellF1}\left[\frac{8}{3},\frac{2}{3},2,\frac{11}{3},\frac{b (c+d x)}{b c-a d},\frac{f (c+d x)}{-d e+c f}\right]+2 b (-d e+c f) \operatorname{AppellF1}\left[\frac{8}{3},\frac{5}{3},1,\frac{11}{3},\frac{b (c+d x)}{b c-a d},\frac{f (c+d x)}{-d e+c f}\right]\Bigg)\Bigg)\Bigg)$$

Problem 2993: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 417 leaves, 4 steps):

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

Result (type 6, 743 leaves):

$$\frac{1}{5 f (a+b x)^{2/3} (e+f x)} (c+d x)^{2/3} \left(-5 (a+b x) - \frac{1}{d} 4 b \left(-\left(\left(5 b c f (c+d x) \text{AppellF1}\left[1, \frac{2}{3}, 1, 2, \frac{b c-a d}{b c+b d x}, \frac{-d e+c f}{f (c+d x)}\right]\right) \Big/ \left(6 b f (c+d x) \text{AppellF1}\left[1, \frac{2}{3}, 1, 2, \frac{b c-a d}{b c+b d x}, \frac{-d e+c f}{f (c+d x)}\right] + b (-3 d e+3 c f) \text{AppellF1}\left[2, \frac{2}{3}, 2, 3, \frac{b c-a d}{b c+b d x}, \frac{-d e+c f}{f (c+d x)}\right] + 2 (b c-a d) f \text{AppellF1}\left[2, \frac{5}{3}, 1, 3, \frac{b c-a d}{b c+b d x}, \frac{-d e+c f}{f (c+d x)}\right]\right)\right) - \left(5 a d f (c+d x) \text{AppellF1}\left[1, \frac{2}{3}, 1, 2, \frac{b c-a d}{b c+b d x}, \frac{-d e+c f}{f (c+d x)}\right]\right) \Big/ \left(-6 b f (c+d x) \text{AppellF1}\left[1, \frac{2}{3}, 1, 2, \frac{b c-a d}{b c+b d x}, \frac{-d e+c f}{f (c+d x)}\right] + 3 b (d e-c f) \text{AppellF1}\left[2, \frac{2}{3}, 2, 3, \frac{b c-a d}{b c+b d x}, \frac{-d e+c f}{f (c+d x)}\right] + 2 (-b c+a d) f \text{AppellF1}\left[2, \frac{5}{3}, 1, 3, \frac{b c-a d}{b c+b d x}, \frac{-d e+c f}{f (c+d x)}\right]\right) - \left(6 (b c-a d) (-d e+c f) \text{AppellF1}\left[\frac{5}{3}, \frac{2}{3}, 1, \frac{8}{3}, \frac{b (c+d x)}{b c-a d}, \frac{f (c+d x)}{-d e+c f}\right]\right) \Big/ \left(\frac{1}{c+d x} 8 (b c-a d) (-d e+c f) \text{AppellF1}\left[\frac{5}{3}, \frac{2}{3}, 1, \frac{8}{3}, \frac{b (c+d x)}{b c-a d}, \frac{f (c+d x)}{-d e+c f}\right] + 3 (b c-a d) f \text{AppellF1}\left[\frac{8}{3}, \frac{2}{3}, 2, \frac{11}{3}, \frac{b (c+d x)}{b c-a d}, \frac{f (c+d x)}{-d e+c f}\right] + 2 b (-d e+c f) \text{AppellF1}\left[\frac{8}{3}, \frac{5}{3}, 1, \frac{11}{3}, \frac{b (c+d x)}{b c-a d}, \frac{f (c+d x)}{-d e+c f}\right]\right)\right)\right)$$

Problem 2994: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 325 leaves, 3 steps):

$$\frac{(a+bx)^{1/3}(c+dx)^{5/3}}{2(de-cf)(e+fx)^2}-\frac{(bc-ad)(a+bx)^{1/3}(c+dx)^{2/3}}{6(be-af)(de-cf)(e+fx)}+$$
$$\frac{(bc-ad)^2\,\text{ArcTan}\left[\frac{1}{\sqrt{3}}+\frac{2(be-af)^{1/3}(c+dx)^{1/3}}{\sqrt{3}(de-cf)^{1/3}(a+bx)^{1/3}}\right]}{3\sqrt{3}(be-af)^{5/3}(de-cf)^{4/3}}-\frac{(bc-ad)^2\,\text{Log}[e+fx]}{18(be-af)^{5/3}(de-cf)^{4/3}}+$$
$$\frac{(bc-ad)^2\,\text{Log}\left[-(a+bx)^{1/3}+\frac{(be-af)^{1/3}(c+dx)^{1/3}}{(de-cf)^{1/3}}\right]}{6(be-af)^{5/3}(de-cf)^{4/3}}$$

Result (type 5, 196 leaves):

$$\left((a+bx)^{1/3}\left(f(be-af)(c+dx)(-3acf+ad(e-2fx)+b(2ce+3dex-cfx))-2(bc-ad)^2 f\left(\frac{(be-af)(c+dx)}{(bc-ad)(e+fx)}\right)^{1/3}(e+fx)^2\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},\frac{(-de+cf)(a+bx)}{(bc-ad)(e+fx)}\right]\right)\right)\Big/\left(6f(be-af)^2(de-cf)(c+dx)^{1/3}(e+fx)^2\right)$$

Problem 2995: Result unnecessarily involves higher level functions.

$$\int\frac{(a+bx)^{1/3}(c+dx)^{2/3}}{(e+fx)^4}\,dx$$

Optimal (type 3, 465 leaves, 4 steps):

$$-\frac{f(a+bx)^{4/3}(c+dx)^{5/3}}{3(be-af)(de-cf)(e+fx)^3}+\frac{(9bde-5bcf-4adf)(a+bx)^{1/3}(c+dx)^{5/3}}{18(be-af)(de-cf)^2(e+fx)^2}-$$
$$\frac{(bc-ad)(9bde-5bcf-4adf)(a+bx)^{1/3}(c+dx)^{2/3}}{54(be-af)^2(de-cf)^2(e+fx)}+$$
$$\left((bc-ad)^2(9bde-5bcf-4adf)\,\text{ArcTan}\left[\frac{1}{\sqrt{3}}+\frac{2(be-af)^{1/3}(c+dx)^{1/3}}{\sqrt{3}(de-cf)^{1/3}(a+bx)^{1/3}}\right]\right)\Big/$$
$$\left(27\sqrt{3}(be-af)^{8/3}(de-cf)^{7/3}\right)-\frac{(bc-ad)^2(9bde-5bcf-4adf)\,\text{Log}[e+fx]}{162(be-af)^{8/3}(de-cf)^{7/3}}+$$
$$\left((bc-ad)^2(9bde-5bcf-4adf)\,\text{Log}\left[-(a+bx)^{1/3}+\frac{(be-af)^{1/3}(c+dx)^{1/3}}{(de-cf)^{1/3}}\right]\right)\Big/$$
$$\left(54(be-af)^{8/3}(de-cf)^{7/3}\right)$$

Result (type 5, 304 leaves):

$$\frac{1}{54 f (b e-a f)^3 (d e-c f)^2 (c+d x)^{1/3} (e+f x)^3} (a+b x)^{1/3} \Big(-(b e-a f) (c+d x) \big(18 (b e-a f)^2 (d e-c f)^2-3 (b e-a f) (d e-c f) (3 b d e-b c f-2 a d f) (e+f x)-\left(8 a^2 d^2 f^2-4 a b d f (3 d e+c f)+b^2 \left(9 d^2 e^2-6 c d e f+5 c^2 f^2\right)\right) (e+f x)^2\big)+2 (b c-a d)^2 f (-9 b d e+5 b c f+4 a d f) \left(\frac{(b e-a f) (c+d x)}{(b c-a d) (e+f x)}\right)^{1/3} (e+f x)^3 \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},\frac{(-d e+c f) (a+b x)}{(b c-a d) (e+f x)}\right]\Big)$$

Problem 2996: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 475 leaves, 4 steps):

$$\frac{1}{27 b^2 d^3}\left(5 a^2 d^2 f^2-2 a b d f (9 d e-4 c f)+b^2 \left(27 d^2 e^2-36 c d e f+14 c^2 f^2\right)\right) (a+b x)^{1/3} (c+d x)^{2/3}+\frac{f (12 b d e-7 b c f-5 a d f) (a+b x)^{4/3} (c+d x)^{2/3}}{18 b^2 d^2}+\frac{f (a+b x)^{4/3} (c+d x)^{2/3} (e+f x)}{3 b d}+\frac{1}{27 \sqrt{3} b^{8/3} d^{10/3}}(b c-a d) \left(5 a^2 d^2 f^2-2 a b d f (9 d e-4 c f)+b^2 \left(27 d^2 e^2-36 c d e f+14 c^2 f^2\right)\right) \text{ArcTan}\left[\frac{1}{\sqrt{3}}+\frac{2 b^{1/3} (c+d x)^{1/3}}{\sqrt{3} d^{1/3} (a+b x)^{1/3}}\right]+\frac{1}{162 b^{8/3} d^{10/3}}(b c-a d) \left(5 a^2 d^2 f^2-2 a b d f (9 d e-4 c f)+b^2 \left(27 d^2 e^2-36 c d e f+14 c^2 f^2\right)\right) \text{Log}[a+b x]+\frac{1}{54 b^{8/3} d^{10/3}}(b c-a d) \left(5 a^2 d^2 f^2-2 a b d f (9 d e-4 c f)+b^2 \left(27 d^2 e^2-36 c d e f+14 c^2 f^2\right)\right) \text{Log}\left[-1+\frac{b^{1/3} (c+d x)^{1/3}}{d^{1/3} (a+b x)^{1/3}}\right]$$

Result (type 5, 229 leaves):

$$\left((c+d x)^{2/3} \Big(d (a+b x) \big(-5 a^2 d^2 f^2+a b d f (-5 c f+3 d (6 e+f x))+b^2 \left(28 c^2 f^2-3 c d f (24 e+7 f x)+18 d^2 \left(3 e^2+3 e f x+f^2 x^2\right)\right)\big)-(b c-a d) \left(5 a^2 d^2 f^2+2 a b d f (-9 d e+4 c f)+b^2 \left(27 d^2 e^2-36 c d e f+14 c^2 f^2\right)\right) \left(\frac{d (a+b x)}{-b c+a d}\right)^{2/3} \text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},\frac{b (c+d x)}{b c-a d}\right]\Big)\right)\Big/\left(54 b^2 d^4 (a+b x)^{2/3}\right)$$

Problem 2997: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 273 leaves, 3 steps):

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

Result (type 5, 129 leaves):

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

Problem 2998: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 171 leaves, 2 steps):

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

Result (type 5, 76 leaves):

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

Problem 2999: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 339 leaves, 4 steps):

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

Result (type 6, 290 leaves):

$$-\left(\left(21 (b c-a d) (b e-a f)^2 (a+b x)^{4/3} \operatorname{AppellF1}\left[\frac{4}{3},\frac{1}{3},1,\frac{7}{3},\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\Big/\left(4 b (-b e+a f) (c+d x)^{1/3} (e+f x)\left(7 (b c-a d) (b e-a f) \operatorname{AppellF1}\left[\frac{4}{3},\frac{1}{3},1,\frac{7}{3},\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]+(a+b x)\left((-3 b c f+3 a d f) \operatorname{AppellF1}\left[\frac{7}{3},\frac{1}{3},2,\frac{10}{3},\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]+d (-b e+a f) \operatorname{AppellF1}\left[\frac{7}{3},\frac{4}{3},1,\frac{10}{3},\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3000: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 256 leaves, 2 steps):

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

Result (type 5, 124 leaves):

$$\frac{(a+bx)^{1/3}\,(c+dx)^{2/3}\left(\frac{1}{de-cf}+\frac{\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},\frac{(-de+cf)\,(a+bx)}{(bc-ad)\,(e+fx)}\right]}{(-de+cf)\left(\frac{(be-af)\,(c+dx)}{(bc-ad)\,(e+fx)}\right)^{2/3}}\right)}{e+fx}$$

Problem 3001: Result unnecessarily involves higher level functions.

$$\int\frac{(a+bx)^{1/3}}{(c+dx)^{1/3}\,(e+fx)^3}\,dx$$

Optimal (type 3, 386 leaves, 3 steps):

$$-\frac{f\,(a+bx)^{4/3}\,(c+dx)^{2/3}}{2\,(be-af)\,(de-cf)\,(e+fx)^2}+\frac{(3bde-bcf-2adf)\,(a+bx)^{1/3}\,(c+dx)^{2/3}}{3\,(be-af)\,(de-cf)^2\,(e+fx)}+$$
$$\left((bc-ad)\,(3bde-bcf-2adf)\,\text{ArcTan}\left[\frac{1}{\sqrt{3}}+\frac{2\,(be-af)^{1/3}\,(c+dx)^{1/3}}{\sqrt{3}\,(de-cf)^{1/3}\,(a+bx)^{1/3}}\right]\right)\Big/$$
$$\left(3\sqrt{3}\,(be-af)^{5/3}\,(de-cf)^{7/3}\right)-\frac{(bc-ad)\,(3bde-bcf-2adf)\,\text{Log}[e+fx]}{18\,(be-af)^{5/3}\,(de-cf)^{7/3}}+$$
$$\left((bc-ad)\,(3bde-bcf-2adf)\,\text{Log}\left[-(a+bx)^{1/3}+\frac{(be-af)^{1/3}\,(c+dx)^{1/3}}{(de-cf)^{1/3}}\right]\right)\Big/$$
$$\left(6\,(be-af)^{5/3}\,(de-cf)^{7/3}\right)$$

Result (type 5, 212 leaves):

$$\left((a+bx)^{1/3}\left((be-af)\,(c+dx)\,(3\,(be-af)\,(de-cf)+(3bde+bcf-4adf)\,(e+fx))+\right.\right.$$
$$2\,(bc-ad)\,(-3bde+bcf+2adf)\left(\frac{(be-af)\,(c+dx)}{(bc-ad)\,(e+fx)}\right)^{1/3}$$
$$\left.\left.(e+fx)^2\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},\frac{(-de+cf)\,(a+bx)}{(bc-ad)\,(e+fx)}\right]\right)\right)\Big/$$
$$\left(6\,(be-af)^2\,(de-cf)^2\,(c+dx)^{1/3}\,(e+fx)^2\right)$$

Problem 3002: Result unnecessarily involves higher level functions.

$$\int\frac{(a+bx)^{1/3}}{(c+dx)^{1/3}\,(e+fx)^4}\,dx$$

Optimal (type 3, 591 leaves, 5 steps):

$$\frac{(a+b x)^{1/3} (c+d x)^{2/3}}{3 (d e-c f) (e+f x)^3}+\frac{(6 b d e+b c f-7 a d f) (a+b x)^{1/3} (c+d x)^{2/3}}{18 (b e-a f) (d e-c f)^2 (e+f x)^2}+$$
$$\left(\left(28 a^2 d^2 f^2-a b d f (51 d e+5 c f)+b^2 \left(18 d^2 e^2+15 c d e f-5 c^2 f^2\right)\right) (a+b x)^{1/3} (c+d x)^{2/3}\right) \Big/ \left(54 (b e-a f)^2 (d e-c f)^3 (e+f x)\right)+$$
$$\left((b c-a d) \left(14 a^2 d^2 f^2-4 a b d f (9 d e-2 c f)+b^2 \left(27 d^2 e^2-18 c d e f+5 c^2 f^2\right)\right)\right.$$
$$\left.\text{ArcTan}\left[\frac{1}{\sqrt{3}}+\frac{2 (b e-a f)^{1/3} (c+d x)^{1/3}}{\sqrt{3} (d e-c f)^{1/3} (a+b x)^{1/3}}\right]\right) \Big/ \left(27 \sqrt{3} (b e-a f)^{8/3} (d e-c f)^{10/3}\right)-$$
$$\left((b c-a d) \left(14 a^2 d^2 f^2-4 a b d f (9 d e-2 c f)+b^2 \left(27 d^2 e^2-18 c d e f+5 c^2 f^2\right)\right) \text{Log}[e+f x]\right) \Big/ \left(162 (b e-a f)^{8/3} (d e-c f)^{10/3}\right)+$$
$$\left((b c-a d) \left(14 a^2 d^2 f^2-4 a b d f (9 d e-2 c f)+b^2 \left(27 d^2 e^2-18 c d e f+5 c^2 f^2\right)\right)\right.$$
$$\left.\text{Log}\left[-(a+b x)^{1/3}+\frac{(b e-a f)^{1/3} (c+d x)^{1/3}}{(d e-c f)^{1/3}}\right]\right) \Big/ \left(54 (b e-a f)^{8/3} (d e-c f)^{10/3}\right)$$

Result (type 5, 334 leaves):

$$\frac{1}{54 (b e-a f)^3 (d e-c f)^3 (c+d x)^{1/3} (e+f x)^3} (a+b x)^{1/3} \Big((b e-a f) (c+d x)$$
$$\left(18 (b e-a f)^2 (d e-c f)^2+3 (b e-a f) (d e-c f) (6 b d e+b c f-7 a d f) (e+f x)+\right.$$
$$\left.\left(28 a^2 d^2 f^2-a b d f (51 d e+5 c f)+b^2 \left(18 d^2 e^2+15 c d e f-5 c^2 f^2\right)\right) (e+f x)^2\right)-$$
$$2 (b c-a d) \left(14 a^2 d^2 f^2+4 a b d f (-9 d e+2 c f)+b^2 \left(27 d^2 e^2-18 c d e f+5 c^2 f^2\right)\right)$$
$$\left(\frac{(b e-a f) (c+d x)}{(b c-a d) (e+f x)}\right)^{1/3} (e+f x)^3 \,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},\frac{(-d e+c f) (a+b x)}{(b c-a d) (e+f x)}\right]\Big)$$

Problem 3003: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 587 leaves, 3 steps):

$$\frac{f (a+b x)^{2/3} (c+d x)^{1/3} (e+f x)^2}{3 b d}+\frac{1}{54 b^3 d^3} f (a+b x)^{2/3} (c+d x)^{1/3} \left(28 a^2 d^2 f^2-a b d f (108 d e-31 c f)+b^2 \left(144 d^2 e^2-135 c d e f+40 c^2 f^2\right)+3 b d f (15 b d e-8 b c f-7 a d f) x\right)+\frac{1}{27 \sqrt{3} b^{10/3} d^{11/3}} \left(14 a^3 d^3 f^3-6 a^2 b d^2 f^2 (9 d e-2 c f)+3 a b^2 d f \left(27 d^2 e^2-18 c d e f+5 c^2 f^2\right)-b^3 \left(81 d^3 e^3-162 c d^2 e^2 f+135 c^2 d e f^2-40 c^3 f^3\right)\right) \text{ArcTan}\left[\frac{1}{\sqrt{3}}+\frac{2 d^{1/3} (a+b x)^{1/3}}{\sqrt{3} b^{1/3} (c+d x)^{1/3}}\right]+\frac{1}{162 b^{10/3} d^{11/3}} \left(14 a^3 d^3 f^3-6 a^2 b d^2 f^2 (9 d e-2 c f)+3 a b^2 d f \left(27 d^2 e^2-18 c d e f+5 c^2 f^2\right)-b^3 \left(81 d^3 e^3-162 c d^2 e^2 f+135 c^2 d e f^2-40 c^3 f^3\right)\right) \text{Log}[c+d x]+\frac{1}{54 b^{10/3} d^{11/3}} \left(14 a^3 d^3 f^3-6 a^2 b d^2 f^2 (9 d e-2 c f)+3 a b^2 d f \left(27 d^2 e^2-18 c d e f+5 c^2 f^2\right)-b^3 \left(81 d^3 e^3-162 c d^2 e^2 f+135 c^2 d e f^2-40 c^3 f^3\right)\right) \text{Log}\left[-1+\frac{d^{1/3} (a+b x)^{1/3}}{b^{1/3} (c+d x)^{1/3}}\right]$$

Result (type 5, 275 leaves):

$$\frac{1}{54 b^3 d^4 (a+b x)^{1/3}} (c+d x)^{1/3} \left(d f (a+b x) \left(28 a^2 d^2 f^2+a b d f (31 c f-3 d (36 e+7 f x))+b^2 \left(40 c^2 f^2-3 c d f (45 e+8 f x)+9 d^2 \left(18 e^2+9 e f x+2 f^2 x^2\right)\right)\right)+2 \left(-14 a^3 d^3 f^3+6 a^2 b d^2 f^2 (9 d e-2 c f)-3 a b^2 d f \left(27 d^2 e^2-18 c d e f+5 c^2 f^2\right)+b^3 \left(81 d^3 e^3-162 c d^2 e^2 f+135 c^2 d e f^2-40 c^3 f^3\right)\right) \left(\frac{d (a+b x)}{-b c+a d}\right)^{1/3} \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},\frac{b (c+d x)}{b c-a d}\right]\right)$$

Problem 3004: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 369 leaves, 3 steps):

$$\frac{f (9 b d e-5 b c f-4 a d f) (a+b x)^{2/3} (c+d x)^{1/3}}{6 b^2 d^2}+\frac{f (a+b x)^{2/3} (c+d x)^{1/3} (e+f x)}{2 b d}-\frac{1}{3 \sqrt{3} b^{7/3} d^{8/3}} \left(2 a^2 d^2 f^2-2 a b d f (3 d e-c f)+b^2 \left(9 d^2 e^2-12 c d e f+5 c^2 f^2\right)\right) \text{ArcTan}\left[\frac{1}{\sqrt{3}}+\frac{2 d^{1/3} (a+b x)^{1/3}}{\sqrt{3} b^{1/3} (c+d x)^{1/3}}\right]-\frac{1}{18 b^{7/3} d^{8/3}} \left(2 a^2 d^2 f^2-2 a b d f (3 d e-c f)+b^2 \left(9 d^2 e^2-12 c d e f+5 c^2 f^2\right)\right) \text{Log}[c+d x]-\frac{1}{6 b^{7/3} d^{8/3}} \left(2 a^2 d^2 f^2-2 a b d f (3 d e-c f)+b^2 \left(9 d^2 e^2-12 c d e f+5 c^2 f^2\right)\right) \text{Log}\left[-1+\frac{d^{1/3} (a+b x)^{1/3}}{b^{1/3} (c+d x)^{1/3}}\right]$$

Result (type 5, 162 leaves):

$$\left((c+dx)^{1/3}\left(df\,(a+bx)\,(-5bcf-4adf+3bd\,(4e+fx))+2\left(2a^2d^2f^2+2abdf\,(-3de+cf)+b^2\left(9d^2e^2-12cdef+5c^2f^2\right)\right)\left(\frac{d\,(a+bx)}{-bc+ad}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},\frac{b\,(c+dx)}{bc-ad}\right]\right)\right)\Big/\left(6b^2d^3\,(a+bx)^{1/3}\right)$$

Problem 3005: Result unnecessarily involves higher level functions.

$$\int\frac{e+fx}{(a+bx)^{1/3}\,(c+dx)^{2/3}}\,dx$$

Optimal (type 3, 200 leaves, 2 steps):

$$\frac{f\,(a+bx)^{2/3}\,(c+dx)^{1/3}}{bd}-\frac{(3bde-2bcf-adf)\,\text{ArcTan}\left[\frac{1}{\sqrt{3}}+\frac{2d^{1/3}\,(a+bx)^{1/3}}{\sqrt{3}\,b^{1/3}\,(c+dx)^{1/3}}\right]}{\sqrt{3}\,b^{4/3}\,d^{5/3}}-\frac{(3bde-2bcf-adf)\,\text{Log}[c+dx]}{6b^{4/3}\,d^{5/3}}-\frac{(3bde-2bcf-adf)\,\text{Log}\left[-1+\frac{d^{1/3}\,(a+bx)^{1/3}}{b^{1/3}\,(c+dx)^{1/3}}\right]}{2b^{4/3}\,d^{5/3}}$$

Result (type 5, 99 leaves):

$$\frac{1}{bd^2\,(a+bx)^{1/3}}(c+dx)^{1/3}\left(df\,(a+bx)+(3bde-2bcf-adf)\left(\frac{d\,(a+bx)}{-bc+ad}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},\frac{b\,(c+dx)}{bc-ad}\right]\right)$$

Problem 3006: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 126 leaves, 1 step):

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

Result (type 5, 71 leaves):

$$\frac{3\left(\frac{d\,(a+bx)}{-bc+ad}\right)^{1/3}(c+dx)^{1/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},\frac{b\,(c+dx)}{bc-ad}\right]}{d\,(a+bx)^{1/3}}$$

Problem 3007: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 197 leaves, 1 step):

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

Result (type 5, 108 leaves):

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

Problem 3008: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 293 leaves, 2 steps):

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

Result (type 5, 171 leaves):

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

Problem 3009: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 477 leaves, 4 steps):

$$-\frac{f (a+b x)^{2/3} (c+d x)^{1/3}}{2 (b e-a f) (d e-c f) (e+f x)^2}-\frac{f (9 b d e-4 b c f-5 a d f) (a+b x)^{2/3} (c+d x)^{1/3}}{6 (b e-a f)^2 (d e-c f)^2 (e+f x)}-\left(\left(5 a^2 d^2 f^2-2 a b d f (6 d e-c f)+b^2 \left(9 d^2 e^2-6 c d e f+2 c^2 f^2\right)\right) \text{ArcTan}\left[\frac{1}{\sqrt{3}}+\frac{2 (d e-c f)^{1/3} (a+b x)^{1/3}}{\sqrt{3} (b e-a f)^{1/3} (c+d x)^{1/3}}\right]\right)\Big/\left(3 \sqrt{3} (b e-a f)^{7/3} (d e-c f)^{8/3}\right)+\left(\left(5 a^2 d^2 f^2-2 a b d f (6 d e-c f)+b^2 \left(9 d^2 e^2-6 c d e f+2 c^2 f^2\right)\right) \text{Log}[e+f x]\right)\Big/\left(18 (b e-a f)^{7/3} (d e-c f)^{8/3}\right)-\left(\left(5 a^2 d^2 f^2-2 a b d f (6 d e-c f)+b^2 \left(9 d^2 e^2-6 c d e f+2 c^2 f^2\right)\right) \text{Log}\left[\frac{(d e-c f)^{1/3} (a+b x)^{1/3}}{(b e-a f)^{1/3}}-(c+d x)^{1/3}\right]\right)\Big/\left(6 (b e-a f)^{7/3} (d e-c f)^{8/3}\right)$$

Result (type 5, 244 leaves):

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

Problem 3010: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 1389 leaves, 7 steps):

$$\frac{3 (a+b x)^2 (c+d x)^{2/3} (b c+a d+2 b d x)^{2/3}}{20 d^2}+\frac{1}{560 d^4} 9 (b c-a d) (c+d x)^{2/3} (23 b c-39 a d-16 b d x) (b c+a d+2 b d x)^{2/3}-\Big(81 (b c-a d)^3 \left((c+d x) (b c+a d+2 b d x)\right)^{1/3} \sqrt{d^2 (3 b c+a d+4 b d x)^2} \sqrt{\left(d (3 b c+a d)+4 b d^2 x\right)^2}\Big)\Big/\Big(112 b^{2/3} d^6 (c+d x)^{1/3} (b c+a d+2 b d x)^{1/3} (3 b c+a d+4 b d x) \left(\left(1+\sqrt{3}\right) (b c-a d)^{2/3}+2 b^{1/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}\right)\Big)+\Big(81\times 3^{1/4} \sqrt{2-\sqrt{3}} (b c-a d)^{11/3} \left((c+d x) (b c+a d+2 b d x)\right)^{1/3} \sqrt{\left(d (3 b c+a d)+4 b d^2 x\right)^2} \left((b c-a d)^{2/3}+2 b^{1/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}\right) \sqrt{\left((b c-a d)^{4/3}-2 b^{1/3} (b c-a d)^{2/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}+4 b^{2/3} \left((c+d x) (a d+b (c+2 d x))\right)^{2/3}\right)\Big/\left(\left(1+\sqrt{3}\right) (b c-a d)^{2/3}+2 b^{1/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}\right)^2} \text{EllipticE}\left[\text{ArcSin}\left[\left(\left(1-\sqrt{3}\right) (b c-a d)^{2/3}+2 b^{1/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}\right)\Big/\left(\left(1+\sqrt{3}\right) (b c-a d)^{2/3}+2 b^{1/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}\right)\right],-7-4 \sqrt{3}\right]\Big)\Big/\Big(224 b^{2/3} d^4 (c+d x)^{1/3} (b c+a d+2 b d x)^{1/3} (3 b c+a d+4 b d x) \sqrt{d^2 (3 b c+a d+4 b d x)^2} \sqrt{\left((b c-a d)^{2/3} \left((b c-a d)^{2/3}+2 b^{1/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}\right)\right)\Big/\left(\left(1+\sqrt{3}\right) (b c-a d)^{2/3}+2 b^{1/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}\right)^2}\Big)-\Big(27\times 3^{3/4} (b c-a d)^{11/3} \left((c+d x) (b c+a d+2 b d x)\right)^{1/3} \sqrt{\left(d (3 b c+a d)+4 b d^2 x\right)^2} \left((b c-a d)^{2/3}+2 b^{1/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}\right) \sqrt{\left((b c-a d)^{4/3}-2 b^{1/3} (b c-a d)^{2/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}+4 b^{2/3} \left((c+d x) (a d+b (c+2 d x))\right)^{2/3}\right)\Big/\left(\left(1+\sqrt{3}\right) (b c-a d)^{2/3}+2 b^{1/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}\right)^2} \text{EllipticF}\left[\text{ArcSin}\left[\left(\left(1-\sqrt{3}\right) (b c-a d)^{2/3}+2 b^{1/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}\right)\Big/\left(\left(1+\sqrt{3}\right) (b c-a d)^{2/3}+2 b^{1/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}\right)\right],-7-4 \sqrt{3}\right]\Big)\Big/\Big(56 \sqrt{2} b^{2/3} d^4 (c+d x)^{1/3} (b c+a d+2 b d x)^{1/3} (3 b c+a d+4 b d x) \sqrt{d^2 (3 b c+a d+4 b d x)^2} \sqrt{\left((b c-a d)^{2/3} \left((b c-a d)^{2/3}+2 b^{1/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}\right)\right)\Big/\left(\left(1+\sqrt{3}\right) (b c-a d)^{2/3}+2 b^{1/3} \left((c+d x) (a d+b (c+2 d x))\right)^{1/3}\right)^2}\Big)$$

Result (type 5, 160 leaves) :

$$-\left(\left(3\,\left(a\,d+b\,\left(c+2\,d\,x\right)\right)^{2/3}\left(-2\,b\,\left(c+d\,x\right)\,\left(145\,a^2\,d^2+2\,a\,b\,d\,\left(-93\,c+52\,d\,x\right)+b^2\,\left(69\,c^2-48\,c\,d\,x+28\,d^2\,x^2\right)\right)+135\times 2^{1/3}\,\left(b\,c-a\,d\right)^3\,\left(\frac{b\,\left(c+d\,x\right)}{b\,c-a\,d}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{a\,d+b\,\left(c+2\,d\,x\right)}{-b\,c+a\,d}\right]\right)\right)\Big/\left(1120\,b\,d^4\,\left(c+d\,x\right)^{1/3}\right)\right)$$

Problem 3011: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 1373 leaves, 7 steps):

$$-\frac{45\,(b\,c-a\,d)\,(c+d\,x)^{2/3}\,(b\,c+a\,d+2\,b\,d\,x)^{2/3}}{112\,d^3}+\frac{3\,(a+b\,x)\,(c+d\,x)^{2/3}\,(b\,c+a\,d+2\,b\,d\,x)^{2/3}}{14\,d^2}+$$

$$\Big(99\,(b\,c-a\,d)^2\,\big((c+d\,x)\,(b\,c+a\,d+2\,b\,d\,x)\big)^{1/3}\,\sqrt{d^2\,(3\,b\,c+a\,d+4\,b\,d\,x)^2}$$
$$\sqrt{\big(d\,(3\,b\,c+a\,d)+4\,b\,d^2\,x\big)^2}\Big)\Big/\Big(112\,b^{2/3}\,d^5\,(c+d\,x)^{1/3}\,(b\,c+a\,d+2\,b\,d\,x)^{1/3}$$
$$(3\,b\,c+a\,d+4\,b\,d\,x)\,\Big(\big(1+\sqrt{3}\big)\,(b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}\Big)\Big)-$$

$$\Big(99\times 3^{1/4}\,\sqrt{2-\sqrt{3}}\,(b\,c-a\,d)^{8/3}\,\big((c+d\,x)\,(b\,c+a\,d+2\,b\,d\,x)\big)^{1/3}\,\sqrt{\big(d\,(3\,b\,c+a\,d)+4\,b\,d^2\,x\big)^2}$$
$$\Big((b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}\Big)\,\sqrt{\Big((b\,c-a\,d)^{4/3}-2\,b^{1/3}\,(b\,c-a\,d)^{2/3}}$$
$$\overline{\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}+4\,b^{2/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{2/3}\Big)\Big/}$$
$$\overline{\Big(\big(1+\sqrt{3}\big)\,(b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}\Big)^2}$$
$$\text{EllipticE}\Big[\text{ArcSin}\Big[\Big(\big(1-\sqrt{3}\big)\,(b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}\Big)\Big/$$
$$\Big(\big(1+\sqrt{3}\big)\,(b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}\Big)\Big],\,-7-4\,\sqrt{3}\Big]\Big)\Big/$$
$$\Big(224\,b^{2/3}\,d^3\,(c+d\,x)^{1/3}\,(b\,c+a\,d+2\,b\,d\,x)^{1/3}\,(3\,b\,c+a\,d+4\,b\,d\,x)\,\sqrt{d^2\,(3\,b\,c+a\,d+4\,b\,d\,x)^2}$$
$$\sqrt{\Big((b\,c-a\,d)^{2/3}\,\Big((b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}\Big)\Big)\Big/}$$
$$\overline{\Big(\big(1+\sqrt{3}\big)\,(b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}\Big)^2}\Big)+$$

$$\Big(33\times 3^{3/4}\,(b\,c-a\,d)^{8/3}\,\big((c+d\,x)\,(b\,c+a\,d+2\,b\,d\,x)\big)^{1/3}\,\sqrt{\big(d\,(3\,b\,c+a\,d)+4\,b\,d^2\,x\big)^2}$$
$$\Big((b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}\Big)$$
$$\sqrt{\Big((b\,c-a\,d)^{4/3}-2\,b^{1/3}\,(b\,c-a\,d)^{2/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}+}$$
$$\overline{4\,b^{2/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{2/3}\Big)\Big/}$$
$$\overline{\Big(\big(1+\sqrt{3}\big)\,(b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}\Big)^2}$$
$$\text{EllipticF}\Big[\text{ArcSin}\Big[\Big(\big(1-\sqrt{3}\big)\,(b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}\Big)\Big/$$
$$\Big(\big(1+\sqrt{3}\big)\,(b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}\Big)\Big],\,-7-4\,\sqrt{3}\Big]\Big)\Big/$$
$$\Big(56\,\sqrt{2}\,b^{2/3}\,d^3\,(c+d\,x)^{1/3}\,(b\,c+a\,d+2\,b\,d\,x)^{1/3}\,(3\,b\,c+a\,d+4\,b\,d\,x)\,\sqrt{d^2\,(3\,b\,c+a\,d+4\,b\,d\,x)^2}$$
$$\sqrt{\Big((b\,c-a\,d)^{2/3}\,\Big((b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}\Big)\Big)\Big/}$$
$$\overline{\Big(\big(1+\sqrt{3}\big)\,(b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\big((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\big)^{1/3}\Big)^2}\Big)$$

Result (type 5, 129 leaves) :

$$\left(3\left(a d+b\left(c+2 d x\right)\right)^{2/3}\left(-2 b\left(c+d x\right)\left(15 b c-23 a d-8 b d x\right)+33\times 2^{1/3}\left(b c-a d\right)^{2}\left(\frac{b\left(c+d x\right)}{b c-a d}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{a d+b\left(c+2 d x\right)}{-b c+a d}\right]\right)\right)\Big/\left(224 b d^{3}\left(c+d x\right)^{1/3}\right)$$

Problem 3012: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 1326 leaves, 6 steps):

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

$$\left(9\times 3^{1/4} \sqrt{2-\sqrt{3}} (b c-a d)^{5/3} ((c+d x) (b c+a d+2 b d x))^{1/3} \sqrt{(d (3 b c+a d)+4 b d^2 x)^2} \left((b c-a d)^{2/3}+2 b^{1/3} ((c+d x) (a d+b (c+2 d x)))^{1/3}\right) \sqrt{\left(\left((b c-a d)^{4/3}-2 b^{1/3} (b c-a d)^{2/3} ((c+d x) (a d+b (c+2 d x)))^{1/3}+4 b^{2/3} ((c+d x) (a d+b (c+2 d x)))^{2/3}\right) \Big/ \left(\left(1+\sqrt{3}\right) (b c-a d)^{2/3}+2 b^{1/3} ((c+d x) (a d+b (c+2 d x)))^{1/3}\right)^2\right)} \text{EllipticE}\left[\text{ArcSin}\left[\left(\left(1-\sqrt{3}\right) (b c-a d)^{2/3}+2 b^{1/3} ((c+d x) (a d+b (c+2 d x)))^{1/3}\right) \Big/ \left(\left(1+\sqrt{3}\right) (b c-a d)^{2/3}+2 b^{1/3} ((c+d x) (a d+b (c+2 d x)))^{1/3}\right)\right], -7-4 \sqrt{3}\right]\right) \Big/$$

$$\left(16 b^{2/3} d^2 (c+d x)^{1/3} (b c+a d+2 b d x)^{1/3} (3 b c+a d+4 b d x) \sqrt{d^2 (3 b c+a d+4 b d x)^2} \sqrt{\left((b c-a d)^{2/3} \left((b c-a d)^{2/3}+2 b^{1/3} ((c+d x) (a d+b (c+2 d x)))^{1/3}\right)\right) \Big/ \left(\left(1+\sqrt{3}\right) (b c-a d)^{2/3}+2 b^{1/3} ((c+d x) (a d+b (c+2 d x)))^{1/3}\right)^2}\right)-$$

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

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

Result (type 5, 95 leaves) :

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

Problem 3013: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 1283 leaves, 5 steps) :

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

Result (type 5, 94 leaves):

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

Problem 3014: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 178 leaves, 1 step):

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

Result (type 6, 276 leaves):

$$-\left(\left(15 d\,(a+b x)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\frac{-b c+a d}{d\,(a+b x)},-\frac{b c-a d}{2 a d+2 b d x}\right]\right)\Big/\left(b\,(c+d x)^{1/3}\,(a d+b\,(c+2 d x))^{1/3}\left(10 d\,(a+b x)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\frac{-b c+a d}{d\,(a+b x)},-\frac{b c-a d}{2 a d+2 b d x}\right]-(b c-a d)\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\frac{-b c+a d}{d\,(a+b x)},-\frac{b c-a d}{2 a d+2 b d x}\right]+2\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\frac{-b c+a d}{d\,(a+b x)},-\frac{b c-a d}{2 a d+2 b d x}\right]\right)\right)\right)\right)$$

Problem 3015: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 1510 leaves, 8 steps):

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

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

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

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

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

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

Result (type 6, 593 leaves) :

$$\frac{1}{5\,(b c-a d)^2}(c+d x)^{2/3}\,(a d+b\,(c+2 d x))^{2/3}\left(-\frac{5}{a+b x}+\frac{1}{b c+a d+2 b d x}d\left(10-\frac{5 c}{c+d x}+\frac{5 a d}{b c+b d x}+\right.\right.$$
$$\left(100 b\,(b c-a d)\,(c+d x)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},1,\frac{5}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]\right)\Big/$$
$$\left(d\,(a+b x)\left(10 b\,(c+d x)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},1,\frac{5}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]+\right.\right.$$
$$(b c-a d)\left(6\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},2,\frac{8}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]+\right.$$
$$\left.\left.\left.\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},1,\frac{8}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]\right)\right)\right)-$$
$$\left(16\,(b c-a d)^2\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},1,\frac{8}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]\right)\Big/$$
$$\left(d\,(a+b x)\left(16 b\,(c+d x)\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},1,\frac{8}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]+\right.\right.$$
$$(b c-a d)\left(6\,\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},2,\frac{11}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]+\right.$$
$$\left.\left.\left.\left.\left.\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},1,\frac{11}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]\right)\right)\right)\right)\right)$$

Problem 3016: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 1558 leaves, 9 steps):

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

$$\text{EllipticE}\Big[\text{ArcSin}\Big[\Big(\big(1-\sqrt{3}\big)(bc-ad)^{2/3}+2b^{1/3}\big((c+dx)(ad+b(c+2dx))\big)^{1/3}\Big)\Big/$$

$$\Big(\big(1+\sqrt{3}\big)(bc-ad)^{2/3}+2b^{1/3}\big((c+dx)(ad+b(c+2dx))\big)^{1/3}\Big)\Big],-7-4\sqrt{3}\Big]\Bigg/$$

$$\Big(b^{2/3}(bc-ad)^{7/3}(c+dx)^{1/3}(bc+ad+2bdx)^{1/3}(3bc+ad+4bdx)\sqrt{d^2(3bc+ad+4bdx)^2}$$

$$\sqrt{\Big(\Big((bc-ad)^{2/3}\Big((bc-ad)^{2/3}+2b^{1/3}\big((c+dx)(ad+b(c+2dx))\big)^{1/3}\Big)\Big)\Big/}$$

$$\Big(\big(1+\sqrt{3}\big)(bc-ad)^{2/3}+2b^{1/3}\big((c+dx)(ad+b(c+2dx))\big)^{1/3}\Big)^2\Big)\Big)-$$

$$\Big(2\sqrt{2}\,d^2\big((c+dx)(bc+ad+2bdx)\big)^{1/3}\sqrt{\big(d(3bc+ad)+4bd^2x\big)^2}$$

$$\Big((bc-ad)^{2/3}+2b^{1/3}\big((c+dx)(ad+b(c+2dx))\big)^{1/3}\Big)$$

$$\sqrt{\Big(\Big((bc-ad)^{4/3}-2b^{1/3}(bc-ad)^{2/3}\big((c+dx)(ad+b(c+2dx))\big)^{1/3}+}$$

$$4b^{2/3}\big((c+dx)(ad+b(c+2dx))\big)^{2/3}\Big)\Big/$$

$$\Big(\big(1+\sqrt{3}\big)(bc-ad)^{2/3}+2b^{1/3}\big((c+dx)(ad+b(c+2dx))\big)^{1/3}\Big)^2\Big)$$

$$\text{EllipticF}\Big[\text{ArcSin}\Big[\Big(\big(1-\sqrt{3}\big)(bc-ad)^{2/3}+2b^{1/3}\big((c+dx)(ad+b(c+2dx))\big)^{1/3}\Big)\Big/$$

$$\Big(\big(1+\sqrt{3}\big)(bc-ad)^{2/3}+2b^{1/3}\big((c+dx)(ad+b(c+2dx))\big)^{1/3}\Big)\Big],-7-4\sqrt{3}\Big]\Bigg/$$

$$\Big(3^{1/4}b^{2/3}(bc-ad)^{7/3}(c+dx)^{1/3}(bc+ad+2bdx)^{1/3}(3bc+ad+4bdx)$$

$$\sqrt{d^2(3bc+ad+4bdx)^2}$$

$$\sqrt{\Big(\Big((bc-ad)^{2/3}\Big((bc-ad)^{2/3}+2b^{1/3}\big((c+dx)(ad+b(c+2dx))\big)^{1/3}\Big)\Big)\Big/}$$

$$\Big(\big(1+\sqrt{3}\big)(bc-ad)^{2/3}+2b^{1/3}\big((c+dx)(ad+b(c+2dx))\big)^{1/3}\Big)^2\Big)\Big)-$$

$$\frac{2d^2\,\text{Log}[a+bx]}{3b^{2/3}(bc-ad)^{8/3}}+\frac{d^2\,\text{Log}\Big[\frac{b^{2/3}(c+dx)^{2/3}}{(bc-ad)^{1/3}}-(bc+ad+2bdx)^{1/3}\Big]}{b^{2/3}(bc-ad)^{8/3}}$$

Result (type 6, 620 leaves):

$$\frac{1}{10} (c+d x)^{2/3} (a d+b (c+2 d x))^{2/3} \left(\frac{5 (-b c+5 a d+4 b d x)}{(b c-a d)^3 (a+b x)^2}+\left(4 d^2 \left(10-\frac{5 c}{c+d x}+\frac{5 a d}{b c+b d x}+\left(75 b (b c-a d) (c+d x) \text{AppellF1}\left[\frac{2}{3},\frac{1}{3},1,\frac{5}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]\right)\Big/\left(d (a+b x) \left(10 b (c+d x) \text{AppellF1}\left[\frac{2}{3},\frac{1}{3},1,\frac{5}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]+(b c-a d) \left(6 \text{AppellF1}\left[\frac{5}{3},\frac{1}{3},2,\frac{8}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]+\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},1,\frac{8}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]\right)\right)\right)-\left(16 (b c-a d)^2 \text{AppellF1}\left[\frac{5}{3},\frac{1}{3},1,\frac{8}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]\right)\Big/\left(d (a+b x) \left(16 b (c+d x) \text{AppellF1}\left[\frac{5}{3},\frac{1}{3},1,\frac{8}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]+(b c-a d) \left(6 \text{AppellF1}\left[\frac{8}{3},\frac{1}{3},2,\frac{11}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]+\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},1,\frac{11}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]\right)\right)\right)\right)\Big/\left((-b c+a d)^3 (b c+a d+2 b d x)\right)\right)$$

Problem 3017: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 1388 leaves, 7 steps):

$$\frac{3\,(a+b\,x)^2\,(c+d\,x)^{2/3}}{14\,d^2\,(b\,c+a\,d+2\,b\,d\,x)^{1/3}}+\frac{9\,(b\,c-a\,d)\,(c+d\,x)^{2/3}\,(b\,c-7\,a\,d-6\,b\,d\,x)}{112\,d^4\,(b\,c+a\,d+2\,b\,d\,x)^{1/3}}+$$

$$\left(81\,(b\,c-a\,d)^2\,\left((c+d\,x)\,(b\,c+a\,d+2\,b\,d\,x)\right)^{1/3}\,\sqrt{d^2\,(3\,b\,c+a\,d+4\,b\,d\,x)^2}\right.$$

$$\left.\sqrt{\left(d\,(3\,b\,c+a\,d)+4\,b\,d^2\,x\right)^2}\right)\Big/\left(112\,b^{2/3}\,d^6\,(c+d\,x)^{1/3}\,(b\,c+a\,d+2\,b\,d\,x)^{1/3}\right.$$

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

$$\left(81\times 3^{1/4}\,\sqrt{2-\sqrt{3}}\,(b\,c-a\,d)^{8/3}\,\left((c+d\,x)\,(b\,c+a\,d+2\,b\,d\,x)\right)^{1/3}\,\sqrt{\left(d\,(3\,b\,c+a\,d)+4\,b\,d^2\,x\right)^2}\right.$$

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

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

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

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

$$\left.\left.\left.\left(\left(1+\sqrt{3}\right)\,(b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\left((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\right)^{1/3}\right)\right],\,-7-4\,\sqrt{3}\,\right]\right)\Big/$$

$$\left(224\,b^{2/3}\,d^4\,(c+d\,x)^{1/3}\,(b\,c+a\,d+2\,b\,d\,x)^{1/3}\,(3\,b\,c+a\,d+4\,b\,d\,x)\,\sqrt{d^2\,(3\,b\,c+a\,d+4\,b\,d\,x)^2}\right.$$

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

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

$$\left(27\times 3^{3/4}\,(b\,c-a\,d)^{8/3}\,\left((c+d\,x)\,(b\,c+a\,d+2\,b\,d\,x)\right)^{1/3}\,\sqrt{\left(d\,(3\,b\,c+a\,d)+4\,b\,d^2\,x\right)^2}\right.$$

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

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

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

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

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

$$\left.\left.\left.\left(\left(1+\sqrt{3}\right)\,(b\,c-a\,d)^{2/3}+2\,b^{1/3}\,\left((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\right)^{1/3}\right)\right],\,-7-4\,\sqrt{3}\,\right]\right)\Big/$$

$$\left(56\,\sqrt{2}\,b^{2/3}\,d^4\,(c+d\,x)^{1/3}\,(b\,c+a\,d+2\,b\,d\,x)^{1/3}\,(3\,b\,c+a\,d+4\,b\,d\,x)\,\sqrt{d^2\,(3\,b\,c+a\,d+4\,b\,d\,x)^2}\right.$$

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

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

Result (type 5, 157 leaves) :

$$\frac{1}{224\,(c+d\,x)^{1/3}}\left(a\,d+b\,(c+2\,d\,x)\right)^{2/3}\left(\frac{6\,(c+d\,x)\left(-11\,b\,c+15\,a\,d+4\,b\,d\,x+\frac{14\,(b\,c-a\,d)^2}{a\,d+b\,(c+2\,d\,x)}\right)}{d^4}+\frac{1}{b\,d^4}81\times 2^{1/3}\,(b\,c-a\,d)^2\left(\frac{b\,(c+d\,x)}{b\,c-a\,d}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{a\,d+b\,(c+2\,d\,x)}{-b\,c+a\,d}\right]\right)$$

Problem 3018: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 1366 leaves, 7 steps):

$$-\frac{3 \left(b c-a d\right) \left(c+d x\right)^{2/3}}{4 d^3 \left(b c+a d+2 b d x\right)^{1/3}}+\frac{3 \left(c+d x\right)^{2/3} \left(b c+a d+2 b d x\right)^{2/3}}{16 d^3}-$$

$$\left(9 \left(b c-a d\right) \left(\left(c+d x\right) \left(b c+a d+2 b d x\right)\right)^{1/3} \sqrt{d^2 \left(3 b c+a d+4 b d x\right)^2} \sqrt{\left(d \left(3 b c+a d\right)+4 b d^2 x\right)^2}\right) \Big/ \left(16 b^{2/3} d^5 \left(c+d x\right)^{1/3} \left(b c+a d+2 b d x\right)^{1/3} \left(3 b c+a d+4 b d x\right) \left(\left(1+\sqrt{3}\right) \left(b c-a d\right)^{2/3}+2 b^{1/3} \left(\left(c+d x\right) \left(a d+b \left(c+2 d x\right)\right)\right)^{1/3}\right)\right)+$$

$$\left(9\times 3^{1/4} \sqrt{2-\sqrt{3}} \left(b c-a d\right)^{5/3} \left(\left(c+d x\right) \left(b c+a d+2 b d x\right)\right)^{1/3} \sqrt{\left(d \left(3 b c+a d\right)+4 b d^2 x\right)^2} \left(\left(b c-a d\right)^{2/3}+2 b^{1/3} \left(\left(c+d x\right) \left(a d+b \left(c+2 d x\right)\right)\right)^{1/3}\right) \sqrt{\left(\left(b c-a d\right)^{4/3}-2 b^{1/3} \left(b c-a d\right)^{2/3} \left(\left(c+d x\right) \left(a d+b \left(c+2 d x\right)\right)\right)^{1/3}+4 b^{2/3} \left(\left(c+d x\right) \left(a d+b \left(c+2 d x\right)\right)\right)^{2/3}\right) \Big/ \left(\left(1+\sqrt{3}\right) \left(b c-a d\right)^{2/3}+2 b^{1/3} \left(\left(c+d x\right) \left(a d+b \left(c+2 d x\right)\right)\right)^{1/3}\right)^2} \,\text{EllipticE}\left[\text{ArcSin}\left[\left(\left(1-\sqrt{3}\right) \left(b c-a d\right)^{2/3}+2 b^{1/3} \left(\left(c+d x\right) \left(a d+b \left(c+2 d x\right)\right)\right)^{1/3}\right) \Big/ \left(\left(1+\sqrt{3}\right) \left(b c-a d\right)^{2/3}+2 b^{1/3} \left(\left(c+d x\right) \left(a d+b \left(c+2 d x\right)\right)\right)^{1/3}\right)\right],-7-4 \sqrt{3}\right]\right) \Big/ \left(32 b^{2/3} d^3 \left(c+d x\right)^{1/3} \left(b c+a d+2 b d x\right)^{1/3} \left(3 b c+a d+4 b d x\right) \sqrt{d^2 \left(3 b c+a d+4 b d x\right)^2} \sqrt{\left(\left(b c-a d\right)^{2/3} \left(\left(b c-a d\right)^{2/3}+2 b^{1/3} \left(\left(c+d x\right) \left(a d+b \left(c+2 d x\right)\right)\right)^{1/3}\right)\right) \Big/ \left(\left(1+\sqrt{3}\right) \left(b c-a d\right)^{2/3}+2 b^{1/3} \left(\left(c+d x\right) \left(a d+b \left(c+2 d x\right)\right)\right)^{1/3}\right)^2}\right)-$$

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

Result (type 5, 119 leaves):

$$-\left(\left(3\,(c+d\,x)^{2/3}\left(6\,b\,c-10\,a\,d-4\,b\,d\,x+\frac{1}{\left(\frac{b\,(c+d\,x)}{b\,c-a\,d}\right)^{2/3}}3\times 2^{1/3}\,(a\,d+b\,(c+2\,d\,x))\right.\right.\right.$$
$$\left.\left.\left.\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{a\,d+b\,(c+2\,d\,x)}{-b\,c+a\,d}\right]\right)\right)\Big/\left(32\,d^3\,(a\,d+b\,(c+2\,d\,x))^{1/3}\right)\right)$$

Problem 3020: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 1333 leaves, 6 steps):

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

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

$$\left(3\times3^{1/4}\sqrt{2-\sqrt{3}}\,\left((c+d\,x)\,(b\,c+a\,d+2\,b\,d\,x)\right)^{1/3}\sqrt{\left(d\,(3\,b\,c+a\,d)+4\,b\,d^2\,x\right)^2}\right.$$
$$\left((b\,c-a\,d)^{2/3}+2\,b^{1/3}\left((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\right)^{1/3}\right)\sqrt{\left(\left((b\,c-a\,d)^{4/3}-2\,b^{1/3}\,(b\,c-a\,d)^{2/3}\right.\right.}$$
$$\overline{\left.\left((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\right)^{1/3}+4\,b^{2/3}\left((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\right)^{2/3}\right)\Big/}$$
$$\overline{\left(\left(1+\sqrt{3}\right)(b\,c-a\,d)^{2/3}+2\,b^{1/3}\left((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\right)^{1/3}\right)^2\Big)}$$
$$\text{EllipticE}\left[\text{ArcSin}\left[\left(\left(1-\sqrt{3}\right)(b\,c-a\,d)^{2/3}+2\,b^{1/3}\left((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\right)^{1/3}\right)\Big/\right.\right.$$
$$\left.\left.\left.\left(\left(1+\sqrt{3}\right)(b\,c-a\,d)^{2/3}+2\,b^{1/3}\left((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\right)^{1/3}\right)\right],\,-7-4\sqrt{3}\right]\right)\Big/$$
$$\left(4\,b^{2/3}\,d\,(b\,c-a\,d)^{1/3}\,(c+d\,x)^{1/3}\,(b\,c+a\,d+2\,b\,d\,x)^{1/3}\,(3\,b\,c+a\,d+4\,b\,d\,x)\right.$$
$$\sqrt{d^2\,(3\,b\,c+a\,d+4\,b\,d\,x)^2}$$
$$\sqrt{\left(\left((b\,c-a\,d)^{2/3}\left((b\,c-a\,d)^{2/3}+2\,b^{1/3}\left((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\right)^{1/3}\right)\right)\Big/\right.}$$
$$\left.\overline{\left(\left(1+\sqrt{3}\right)(b\,c-a\,d)^{2/3}+2\,b^{1/3}\left((c+d\,x)\,(a\,d+b\,(c+2\,d\,x))\right)^{1/3}\right)^2\Big)}\right)+$$

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

Result (type 5, 127 leaves) :

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

Problem 3021: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 113 leaves, 2 steps):

$$\left(3\,(c+d\,x)^{2/3}\left(-\frac{b\,c+a\,d+2\,b\,d\,x}{b\,c-a\,d}\right)^{1/3}\text{AppellF1}\left[\frac{2}{3},\frac{4}{3},1,\frac{5}{3},\frac{2\,b\,(c+d\,x)}{b\,c-a\,d},\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\Big/\left(2\,(b\,c-a\,d)^2\,(b\,c+a\,d+2\,b\,d\,x)^{1/3}\right)$$

Result (type 6, 395 leaves):

$$\left(-15\,b\,(c+d\,x)\,\text{AppellF1}\left[\frac{2}{3},-\frac{2}{3},1,\frac{5}{3},\frac{b\,c-a\,d}{2\,b\,c+2\,b\,d\,x},\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]+6\,d\,(a+b\,x)\left(3\,\text{AppellF1}\left[\frac{5}{3},-\frac{2}{3},2,\frac{8}{3},\frac{b\,c-a\,d}{2\,b\,c+2\,b\,d\,x},\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]-\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},1,\frac{8}{3},\frac{b\,c-a\,d}{2\,b\,c+2\,b\,d\,x},\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]\right)\right)\Big/\left(2\,b\,d\,(a+b\,x)\,(c+d\,x)^{1/3}\,(a\,d+b\,(c+2\,d\,x))^{1/3}\left(5\,b\,(c+d\,x)\,\text{AppellF1}\left[\frac{2}{3},-\frac{2}{3},1,\frac{5}{3},\frac{b\,c-a\,d}{2\,b\,c+2\,b\,d\,x},\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]+(b\,c-a\,d)\left(3\,\text{AppellF1}\left[\frac{5}{3},-\frac{2}{3},2,\frac{8}{3},\frac{b\,c-a\,d}{2\,b\,c+2\,b\,d\,x},\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]-\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},1,\frac{8}{3},\frac{b\,c-a\,d}{2\,b\,c+2\,b\,d\,x},\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]\right)\right)\right)$$

Problem 3022: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 114 leaves, 2 steps):

$$-\left(\left(3\,d\,(c+d\,x)^{2/3}\left(-\frac{b\,c+a\,d+2\,b\,d\,x}{b\,c-a\,d}\right)^{1/3}\text{AppellF1}\left[\frac{2}{3},\frac{4}{3},2,\frac{5}{3},\frac{2\,b\,(c+d\,x)}{b\,c-a\,d},\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\Big/\left(2\,(b\,c-a\,d)^3\,(b\,c+a\,d+2\,b\,d\,x)^{1/3}\right)\right)$$

Result (type 6, 605 leaves):

$$\frac{1}{5\,(a\,d+b\,(c+2\,d\,x))^{1/3}}\,(c+d\,x)^{2/3}\left(-\frac{5\,(13\,a\,d+b\,(c+14\,d\,x))}{(b\,c-a\,d)^3\,(a+b\,x)}+\frac{1}{(-b\,c+a\,d)^3}\right.$$
$$d\left(-\left(\left(400\,b\,(b\,c-a\,d)\,(c+d\,x)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},1,\frac{5}{3},\frac{b\,c-a\,d}{2\,b\,c+2\,b\,d\,x},\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]\right)\right/\right.$$
$$\left(d\,(a+b\,x)\left(10\,b\,(c+d\,x)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},1,\frac{5}{3},\frac{b\,c-a\,d}{2\,b\,c+2\,b\,d\,x},\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]+\right.\right.$$
$$(b\,c-a\,d)\left(6\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},2,\frac{8}{3},\frac{b\,c-a\,d}{2\,b\,c+2\,b\,d\,x},\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]+\right.$$
$$\left.\left.\left.\left.\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},1,\frac{8}{3},\frac{b\,c-a\,d}{2\,b\,c+2\,b\,d\,x},\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]\right)\right)\right)\right)+7\left(-10+\frac{5\,c}{c+d\,x}-\right.$$
$$\frac{5\,a\,d}{b\,c+b\,d\,x}+\left(16\,(b\,c-a\,d)^2\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},1,\frac{8}{3},\frac{b\,c-a\,d}{2\,b\,c+2\,b\,d\,x},\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]\right)\Big/$$
$$\left(d\,(a+b\,x)\left(16\,b\,(c+d\,x)\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},1,\frac{8}{3},\frac{b\,c-a\,d}{2\,b\,c+2\,b\,d\,x},\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]+\right.\right.$$
$$(b\,c-a\,d)\left(6\,\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},2,\frac{11}{3},\frac{b\,c-a\,d}{2\,b\,c+2\,b\,d\,x},\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]+\right.$$
$$\left.\left.\left.\left.\left.\left.\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},1,\frac{11}{3},\frac{b\,c-a\,d}{2\,b\,c+2\,b\,d\,x},\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]\right)\right)\right)\right)\right)\right)$$

Problem 3023: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 116 leaves, 2 steps):

$$\left(3\,d^2\,(c+d\,x)^{2/3}\left(-\frac{b\,c+a\,d+2\,b\,d\,x}{b\,c-a\,d}\right)^{1/3}\text{AppellF1}\left[\frac{2}{3},\frac{4}{3},3,\frac{5}{3},\frac{2\,b\,(c+d\,x)}{b\,c-a\,d},\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\Big/$$
$$\left(2\,(b\,c-a\,d)^4\,(b\,c+a\,d+2\,b\,d\,x)^{1/3}\right)$$

Result (type 6, 638 leaves):

$$\frac{1}{10\,(b c-a d)^4}\,(c+d x)^{2/3}\,\left(a d+b\,(c+2 d x)\right)^{2/3}\left(5\left(\frac{-b c+a d}{(a+b x)^2}+\frac{8 d}{a+b x}+\frac{48 d^2}{b c+a d+2 b d x}\right)-\left(4 d^2\left(\left(475 b\,(b c-a d)\,(c+d x)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},1,\frac{5}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]\right)\Big/\left(d\,(a+b x)\left(10 b\,(c+d x)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},1,\frac{5}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]+(b c-a d)\left(6\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},2,\frac{8}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]+\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},1,\frac{8}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]\right)\right)\right)+8\left(10-\frac{5 c}{c+d x}+\frac{5 a d}{b c+b d x}-\left(16\,(b c-a d)^2\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},1,\frac{8}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]\right)\Big/\left(d\,(a+b x)\left(16 b\,(c+d x)\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},1,\frac{8}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]+(b c-a d)\left(6\,\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},2,\frac{11}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]+\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},1,\frac{11}{3},\frac{b c-a d}{2 b c+2 b d x},\frac{b c-a d}{b c+b d x}\right]\right)\right)\right)\right)\Big/\left(a d+b\,(c+2 d x)\right)\right)$$

Problem 3024: Result unnecessarily involves higher level functions.

$$\int\frac{1}{(d-3 e x)^{1/3}\,(d+e x)\,(d+3 e x)^{1/3}}\,dx$$

Optimal (type 3, 120 leaves, 1 step):

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

Result (type 6, 196 leaves):

$$-\left(\left(45\,(d+e x)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\frac{4 d}{3\,(d+e x)},\frac{2 d}{3\,(d+e x)}\right]\right)\Big/\left(2 e\,(d-3 e x)^{1/3}\,(d+3 e x)^{1/3}\left(15\,(d+e x)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\frac{4 d}{3\,(d+e x)},\frac{2 d}{3\,(d+e x)}\right]+2 d\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\frac{4 d}{3\,(d+e x)},\frac{2 d}{3\,(d+e x)}\right]+2\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\frac{4 d}{3\,(d+e x)},\frac{2 d}{3\,(d+e x)}\right]\right)\right)\right)\right)$$

Problem 3025: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 562 leaves, 5 steps):

$$\frac{3\,(d\,e-c\,f)^2\,(a+b\,x)^{7/3}}{d^2\,(b\,c-a\,d)\,(c+d\,x)^{1/3}}-\frac{1}{27\,b\,d^4}4\,\left(a^2\,d^2\,f^2-a\,b\,d\,f\,(9\,d\,e-7\,c\,f)-b^2\,\left(27\,d^2\,e^2-63\,c\,d\,e\,f+35\,c^2\,f^2\right)\right)\,(a+b\,x)^{1/3}\,(c+d\,x)^{2/3}+\frac{1}{9\,b\,d^3\,(b\,c-a\,d)}\left(a^2\,d^2\,f^2-a\,b\,d\,f\,(9\,d\,e-7\,c\,f)-b^2\,\left(27\,d^2\,e^2-63\,c\,d\,e\,f+35\,c^2\,f^2\right)\right)\,(a+b\,x)^{4/3}\,(c+d\,x)^{2/3}+\frac{f^2\,(a+b\,x)^{7/3}\,(c+d\,x)^{2/3}}{3\,b\,d^2}-\frac{1}{27\,\sqrt{3}\,b^{5/3}\,d^{13/3}}4\,(b\,c-a\,d)\,\left(a^2\,d^2\,f^2-a\,b\,d\,f\,(9\,d\,e-7\,c\,f)-b^2\,\left(27\,d^2\,e^2-63\,c\,d\,e\,f+35\,c^2\,f^2\right)\right)\,\text{ArcTan}\left[\frac{1}{\sqrt{3}}+\frac{2\,b^{1/3}\,(c+d\,x)^{1/3}}{\sqrt{3}\,d^{1/3}\,(a+b\,x)^{1/3}}\right]-\frac{1}{81\,b^{5/3}\,d^{13/3}}2\,(b\,c-a\,d)\,\left(a^2\,d^2\,f^2-a\,b\,d\,f\,(9\,d\,e-7\,c\,f)-b^2\,\left(27\,d^2\,e^2-63\,c\,d\,e\,f+35\,c^2\,f^2\right)\right)\,\text{Log}[a+b\,x]-\frac{1}{27\,b^{5/3}\,d^{13/3}}2\,(b\,c-a\,d)\,\left(a^2\,d^2\,f^2-a\,b\,d\,f\,(9\,d\,e-7\,c\,f)-b^2\,\left(27\,d^2\,e^2-63\,c\,d\,e\,f+35\,c^2\,f^2\right)\right)\,\text{Log}\left[-1+\frac{b^{1/3}\,(c+d\,x)^{1/3}}{d^{1/3}\,(a+b\,x)^{1/3}}\right]$$

Result (type 5, 282 leaves):

$$\frac{1}{27\,b\,d^4}(a+b\,x)^{1/3}\,(c+d\,x)^{2/3}\left(\frac{1}{c+d\,x}\left(2\,a^2\,d^2\,f^2\,(c+d\,x)+b^2\,\left(140\,c^3\,f^2+7\,c^2\,d\,f\,(-36\,e+5\,f\,x)+3\,c\,d^2\,\left(36\,e^2-21\,e\,f\,x-5\,f^2\,x^2\right)+9\,d^3\,x\,\left(3\,e^2+3\,e\,f\,x+f^2\,x^2\right)\right)+a\,b\,d\,\left(-133\,c^2\,f^2+c\,d\,f\,(225\,e-37\,f\,x)+d^2\,\left(-81\,e^2+63\,e\,f\,x+15\,f^2\,x^2\right)\right)\right)+\frac{1}{\left(\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right)^{1/3}}2\,\left(-a^2\,d^2\,f^2+a\,b\,d\,f\,(9\,d\,e-7\,c\,f)+b^2\,\left(27\,d^2\,e^2-63\,c\,d\,e\,f+35\,c^2\,f^2\right)\right)\,\text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)$$

Problem 3026: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 328 leaves, 4 steps):

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

Result (type 5, 137 leaves):

$$\frac{1}{6 d^3}(a+b x)^{1/3} (c+d x)^{2/3} \left(6 b d e-10 b c f+7 a d f+3 b d f x-\frac{18 (b c-a d) (-d e+c f)}{c+d x}+\frac{2 (6 b d e-7 b c f+a d f) \text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},\frac{b (c+d x)}{b c-a d}\right]}{\left(\frac{d (a+b x)}{-b c+a d}\right)^{1/3}}\right)$$

Problem 3027: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 195 leaves, 3 steps):

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

Result (type 5, 95 leaves):

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

Problem 3028: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 380 leaves, 4 steps):

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

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

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

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

Result (type 6, 559 leaves):

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

$$3\left(-5\,d\,(-b\,c+a\,d)\,(a+b\,x)-\frac{1}{d\,(e+f\,x)}2\,b\,(b\,c-a\,d)\,(c+d\,x)\right.$$

$$\left(\left(5\,f\,(-2\,b\,d\,e+b\,c\,f+a\,d\,f)\,(c+d\,x)\,\text{AppellF1}\left[1,\frac{2}{3},1,2,\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]\right)\Big/\right.$$

$$\left(6\,b\,f\,(c+d\,x)\,\text{AppellF1}\left[1,\frac{2}{3},1,2,\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+\right.$$

$$b\,(-3\,d\,e+3\,c\,f)\,\text{AppellF1}\left[2,\frac{2}{3},2,3,\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+$$

$$\left.2\,(b\,c-a\,d)\,f\,\text{AppellF1}\left[2,\frac{5}{3},1,3,\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]\right)-$$

$$\left(4\,b\,(d\,e-c\,f)^2\,\text{AppellF1}\left[\frac{5}{3},\frac{2}{3},1,\frac{8}{3},\frac{b\,(c+d\,x)}{b\,c-a\,d},\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]\right)\Big/$$

$$\left(-\frac{1}{c+d\,x}8\,(b\,c-a\,d)\,(-d\,e+c\,f)\,\text{AppellF1}\left[\frac{5}{3},\frac{2}{3},1,\frac{8}{3},\frac{b\,(c+d\,x)}{b\,c-a\,d},\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]+\right.$$

$$(-3\,b\,c\,f+3\,a\,d\,f)\,\text{AppellF1}\left[\frac{8}{3},\frac{2}{3},2,\frac{11}{3},\frac{b\,(c+d\,x)}{b\,c-a\,d},\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]+$$

$$\left.\left.\left.2\,b\,(d\,e-c\,f)\,\text{AppellF1}\left[\frac{8}{3},\frac{5}{3},1,\frac{11}{3},\frac{b\,(c+d\,x)}{b\,c-a\,d},\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]\right)\right)\right)$$

Problem 3029: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 301 leaves, 3 steps):

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

Result (type 5, 160 leaves) :

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

Problem 3030: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 434 leaves, 4 steps) :

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

Result (type 5, 208 leaves) :

$$\left((a+b x)^{1/3}\left(18 d (b c-a d)+\frac{3 (b e-a f) (d e-c f) (c+d x)}{(e+f x)^2}+\frac{(3 b d e+7 b c f-10 a d f) (c+d x)}{e+f x}-\left(4 (6 b d e+b c f-7 a d f) (c+d x) \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},\frac{(-d e+c f) (a+b x)}{(b c-a d) (e+f x)}\right]\right)\Big/\left(\left(\frac{(b e-a f) (c+d x)}{(b c-a d) (e+f x)}\right)^{2/3} (e+f x)\right)\right)\right)\Big/\left(6 (d e-c f)^3 (c+d x)^{1/3}\right)$$

Problem 3031: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 645 leaves, 6 steps):

$$\frac{3 (b c-a d) (a+b x)^{1/3}}{d (d e-c f) (c+d x)^{1/3} (e+f x)^3}+\frac{(b d e+9 b c f-10 a d f) (a+b x)^{1/3} (c+d x)^{2/3}}{3 d (d e-c f)^2 (e+f x)^3}+\frac{(3 b d e+32 b c f-35 a d f) (a+b x)^{1/3} (c+d x)^{2/3}}{9 (d e-c f)^3 (e+f x)^2}+\left(\left(140 a^2 d^2 f^2-7 a b d f (21 d e+19 c f)+b^2 \left(9 d^2 e^2+129 c d e f+2 c^2 f^2\right)\right) (a+b x)^{1/3} (c+d x)^{2/3}\right)\Big/\left(27 (b e-a f) (d e-c f)^4 (e+f x)\right)+\left(4 (b c-a d) \left(35 a^2 d^2 f^2-7 a b d f (9 d e+c f)+b^2 \left(27 d^2 e^2+9 c d e f-c^2 f^2\right)\right) \text{ArcTan}\left[\frac{1}{\sqrt{3}}+\frac{2 (b e-a f)^{1/3} (c+d x)^{1/3}}{\sqrt{3} (d e-c f)^{1/3} (a+b x)^{1/3}}\right]\right)\Big/\left(27 \sqrt{3} (b e-a f)^{5/3} (d e-c f)^{13/3}\right)-\left(2 (b c-a d) \left(35 a^2 d^2 f^2-7 a b d f (9 d e+c f)+b^2 \left(27 d^2 e^2+9 c d e f-c^2 f^2\right)\right) \text{Log}[e+f x]\right)\Big/\left(81 (b e-a f)^{5/3} (d e-c f)^{13/3}\right)+\left(2 (b c-a d) \left(35 a^2 d^2 f^2-7 a b d f (9 d e+c f)+b^2 \left(27 d^2 e^2+9 c d e f-c^2 f^2\right)\right) \text{Log}\left[-(a+b x)^{1/3}+\frac{(b e-a f)^{1/3} (c+d x)^{1/3}}{(d e-c f)^{1/3}}\right]\right)\Big/\left(27 (b e-a f)^{5/3} (d e-c f)^{13/3}\right)$$

Result (type 5, 371 leaves):

$$\frac{1}{27\,(b e-a f)^2\,(d e-c f)^4\,(c+d x)^{1/3}\,(e+f x)^3}\,(a+b x)^{1/3}\Bigg((b e-a f)\,\Big(9\,(b e-a f)^2\,(d e-c f)^2\,(c+d x)+3\,(b e-a f)\,(d e-c f)\,(3 b d e+5 b c f-8 a d f)\,(c+d x)\,(e+f x)+\left(59 a^2 d^2 f^2-2 a b d f\,(33 d e+26 c f)+b^2\,(9 d^2 e^2+48 c d e f+2 c^2 f^2)\right)\,(c+d x)\,(e+f x)^2+81 d^2\,(b c-a d)\,(b e-a f)\,(e+f x)^3\Big)+4\,(b c-a d)\,\left(-35 a^2 d^2 f^2+7 a b d f\,(9 d e+c f)+b^2\,(-27 d^2 e^2-9 c d e f+c^2 f^2)\right)\left(\frac{(b e-a f)\,(c+d x)}{(b c-a d)\,(e+f x)}\right)^{1/3}(e+f x)^3\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},\frac{(-d e+c f)\,(a+b x)}{(b c-a d)\,(e+f x)}\right]\Bigg)$$

Problem 3032: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(a+b x)\,\sqrt{c+d x}\,(e+f x)^{1/4}}\,dx$$

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

$$\left(2\,(d e-c f)^{1/4}\sqrt{-\frac{f\,(c+d x)}{d e-c f}}\;\text{EllipticPi}\left[-\frac{\sqrt{b}\,\sqrt{d e-c f}}{\sqrt{d}\,\sqrt{b e-a f}},\,\text{ArcSin}\left[\frac{d^{1/4}\,(e+f x)^{1/4}}{(d e-c f)^{1/4}}\right],\,-1\right]\right)\Big/\left(\sqrt{b}\,d^{1/4}\sqrt{b e-a f}\,\sqrt{c+d x}\right)-\left(2\,(d e-c f)^{1/4}\sqrt{-\frac{f\,(c+d x)}{d e-c f}}\;\text{EllipticPi}\left[\frac{\sqrt{b}\,\sqrt{d e-c f}}{\sqrt{d}\,\sqrt{b e-a f}},\,\text{ArcSin}\left[\frac{d^{1/4}\,(e+f x)^{1/4}}{(d e-c f)^{1/4}}\right],\,-1\right]\right)\Big/\left(\sqrt{b}\,d^{1/4}\sqrt{b e-a f}\,\sqrt{c+d x}\right)$$

Result (type 6, 270 leaves):

$$-\left(\left(28 d f\,(a+b x)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},\frac{1}{4},\frac{7}{4},\frac{-b c+a d}{d\,(a+b x)},\frac{-b e+a f}{f\,(a+b x)}\right]\right)\Big/\left(3 b\sqrt{c+d x}\,(e+f x)^{1/4}\left(7 d f\,(a+b x)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},\frac{1}{4},\frac{7}{4},\frac{-b c+a d}{d\,(a+b x)},\frac{-b e+a f}{f\,(a+b x)}\right]+(-b d e+a d f)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},\frac{5}{4},\frac{11}{4},\frac{-b c+a d}{d\,(a+b x)},\frac{-b e+a f}{f\,(a+b x)}\right]+2\,(-b c+a d)\,f\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},\frac{1}{4},\frac{11}{4},\frac{-b c+a d}{d\,(a+b x)},\frac{-b e+a f}{f\,(a+b x)}\right]\right)\right)\right)$$

Problem 3033: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 252 leaves, 5 steps):

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

Result (type 6, 271 leaves):

$$-\left(\left(36 d f\left(a+b x\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},\frac{3}{4},\frac{9}{4},\frac{-b c+a d}{d\left(a+b x\right)},\frac{-b e+a f}{f\left(a+b x\right)}\right]\right)\Big/\left(5 b\sqrt{c+d x}\left(e+f x\right)^{3/4}\left(9 d f\left(a+b x\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},\frac{3}{4},\frac{9}{4},\frac{-b c+a d}{d\left(a+b x\right)},\frac{-b e+a f}{f\left(a+b x\right)}\right]+\left(-3 b d e+3 a d f\right)\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},\frac{7}{4},\frac{13}{4},\frac{-b c+a d}{d\left(a+b x\right)},\frac{-b e+a f}{f\left(a+b x\right)}\right]+2\left(-b c+a d\right) f\,\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},\frac{3}{4},\frac{13}{4},\frac{-b c+a d}{d\left(a+b x\right)},\frac{-b e+a f}{f\left(a+b x\right)}\right]\right)\right)\right)$$

Problem 3035: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 134 leaves, 3 steps):

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

Result (type 6, 201 leaves):

$$\left(c+d x\right)^{n}\left(e+f x\right)^{-n}\left(\left(3 b c e x^{2}\text{AppellF1}\left[2,-n,n,3,-\frac{d x}{c},-\frac{f x}{e}\right]\right)\Big/\left(6 c e\,\text{AppellF1}\left[2,-n,n,3,-\frac{d x}{c},-\frac{f x}{e}\right]+2 n x\left(d e\,\text{AppellF1}\left[3,1-n,n,4,-\frac{d x}{c},-\frac{f x}{e}\right]-c f\,\text{AppellF1}\left[3,-n,1+n,4,-\frac{d x}{c},-\frac{f x}{e}\right]\right)\right)-\frac{1}{f\left(-1+n\right)}a\left(\frac{f\left(c+d x\right)}{-d e+c f}\right)^{-n}\left(e+f x\right)\text{Hypergeometric2F1}\left[1-n,-n,2-n,\frac{d\left(e+f x\right)}{d e-c f}\right]\right)$$

Problem 3041: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 135 leaves, 3 steps):

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

Result (type 6, 192 leaves):

$$(a+b x)^{-n} (e+f x)^n \left(\left(3 a d e x^2 \text{AppellF1}\left[2, n, -n, 3, -\frac{b x}{a}, -\frac{f x}{e}\right]\right) \Big/ \left(6 a e \text{AppellF1}\left[2, n, -n, 3, -\frac{b x}{a}, -\frac{f x}{e}\right]+2 n x \left(a f \text{AppellF1}\left[3, n, 1-n, 4, -\frac{b x}{a}, -\frac{f x}{e}\right]-b e \text{AppellF1}\left[3, 1+n, -n, 4, -\frac{b x}{a}, -\frac{f x}{e}\right]\right)\right)+\frac{c \left(\frac{f (a+b x)}{-b e+a f}\right)^n (e+f x) \text{Hypergeometric2F1}\left[n, 1+n, 2+n, \frac{b (e+f x)}{b e-a f}\right]}{f (1+n)}\right)$$

Problem 3047: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^m (c+d x)^{-m} (e+f x)^p \, dx$$

Optimal (type 6, 121 leaves, 3 steps):

$$\frac{1}{b (1+m)}(a+b x)^{1+m} (c+d x)^{-m} \left(\frac{b (c+d x)}{b c-a d}\right)^m (e+f x)^p \left(\frac{b (e+f x)}{b e-a f}\right)^{-p} \text{AppellF1}\left[1+m, m, -p, 2+m, -\frac{d (a+b x)}{b c-a d}, -\frac{f (a+b x)}{b e-a f}\right]$$

Result (type 6, 290 leaves):

$$\left((b c-a d)\,(b e-a f)\,(2+m)\,(a+b x)^{1+m}\,(c+d x)^{-m}\,(e+f x)^{p}\,\text{AppellF1}\left[1+m,m,-p,2+m,\frac{d\,(a+b x)}{-b c+a d},\frac{f\,(a+b x)}{-b e+a f}\right]\right)\Big/\left(b\,(1+m)\left((b c-a d)\,(b e-a f)\,(2+m)\,\text{AppellF1}\left[1+m,m,-p,2+m,\frac{d\,(a+b x)}{-b c+a d},\frac{f\,(a+b x)}{-b e+a f}\right]-(a+b x)\left((-b c+a d)\,f\,p\,\text{AppellF1}\left[2+m,m,1-p,3+m,\frac{d\,(a+b x)}{-b c+a d},\frac{f\,(a+b x)}{-b e+a f}\right]+d\,(b e-a f)\,m\,\text{AppellF1}\left[2+m,1+m,-p,3+m,\frac{d\,(a+b x)}{-b c+a d},\frac{f\,(a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3048: Result unnecessarily involves higher level functions.

$$\int (5-4 x)^4\,(1+2 x)^{-m}\,(2+3 x)^m\,dx$$

Optimal (type 5, 188 leaves, 4 steps):

$$-\frac{1}{45}\,(88-m)\,(5-4 x)^2\,(1+2 x)^{1-m}\,(2+3 x)^{1+m}-\frac{2}{15}\,(5-4 x)^3\,(1+2 x)^{1-m}\,(2+3 x)^{1+m}-\frac{1}{1215}\,(1+2 x)^{1-m}\,(2+3 x)^{1+m}\left(386850-25441 m+426 m^2-2 m^3-24\left(4359-154 m+m^2\right)x\right)+\frac{1}{1215\,(1-m)}2^{-1-m}\left(3528363-639760 m+29050 m^2-440 m^3+2 m^4\right)(1+2 x)^{1-m}\,\text{Hypergeometric2F1}\left[1-m,-m,2-m,-3\,(1+2 x)\right]$$

Result (type 6, 155 leaves):

$$\left(483\times 2^{-1-m}\,(-5+4 x)^5\,(2+4 x)^{-m}\,(8+12 x)^m\,\text{AppellF1}\left[5,-m,m,6,\frac{3}{23}\,(5-4 x),\frac{1}{7}\,(5-4 x)\right]\right)\Big/\left(5\left(966\,\text{AppellF1}\left[5,-m,m,6,\frac{3}{23}\,(5-4 x),\frac{1}{7}\,(5-4 x)\right]+m\,(-5+4 x)\left(21\,\text{AppellF1}\left[6,1-m,m,7,\frac{3}{23}\,(5-4 x),\frac{1}{7}\,(5-4 x)\right]-23\,\text{AppellF1}\left[6,-m,1+m,7,\frac{3}{23}\,(5-4 x),\frac{1}{7}\,(5-4 x)\right]\right)\right)\right)$$

Problem 3049: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 432 leaves, 4 steps):

$$\frac{f\,(a+b\,x)^{1+m}\,(c+d\,x)^{1-m}\,(e+f\,x)^2}{4\,b\,d}+\frac{1}{24\,b^3\,d^3}$$
$$f\,(a+b\,x)^{1+m}\,(c+d\,x)^{1-m}\,\left(a^2\,d^2\,f^2\,\left(6-5\,m+m^2\right)-2\,a\,b\,d\,f\,\left(6\,d\,e\,(2-m)-c\,f\,\left(3-m^2\right)\right)+\right.$$
$$b^2\,\left(30\,d^2\,e^2-12\,c\,d\,e\,f\,(2+m)+c^2\,f^2\,\left(6+5\,m+m^2\right)\right)-$$
$$\left.2\,b\,d\,f\,\left(a\,d\,f\,(3-m)-b\,\left(6\,d\,e-c\,f\,(3+m)\right)\right)\,x\right)-$$
$$\frac{1}{24\,b^4\,d^3\,(1+m)}\left(a^3\,d^3\,f^3\,\left(6-11\,m+6\,m^2-m^3\right)-3\,a^2\,b\,d^2\,f^2\,\left(2-3\,m+m^2\right)\,\left(4\,d\,e-c\,f\,(1+m)\right)+\right.$$
$$3\,a\,b^2\,d\,f\,(1-m)\,\left(12\,d^2\,e^2-8\,c\,d\,e\,f\,(1+m)+c^2\,f^2\,\left(2+3\,m+m^2\right)\right)-$$
$$\left.b^3\,\left(24\,d^3\,e^3-36\,c\,d^2\,e^2\,f\,(1+m)+12\,c^2\,d\,e\,f^2\,\left(2+3\,m+m^2\right)-c^3\,f^3\,\left(6+11\,m+6\,m^2+m^3\right)\right)\right)$$
$$(a+b\,x)^{1+m}\,(c+d\,x)^{-m}\,\left(\frac{b\,(c+d\,x)}{b\,c-a\,d}\right)^m\,\text{Hypergeometric2F1}\left[m,\,1+m,\,2+m,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]$$

Result (type 6, 440 leaves):

$$(a+b\,x)^m\,(c+d\,x)^{-m}\,\left(\left(9\,a\,c\,e^2\,f\,x^2\,\text{AppellF1}\left[2,\,-m,\,m,\,3,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\right/$$
$$\left(6\,a\,c\,\text{AppellF1}\left[2,\,-m,\,m,\,3,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]+2\,m\,x\right.$$
$$\left.\left(b\,c\,\text{AppellF1}\left[3,\,1-m,\,m,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]-a\,d\,\text{AppellF1}\left[3,\,-m,\,1+m,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\right)+$$
$$\left(4\,a\,c\,e\,f^2\,x^3\,\text{AppellF1}\left[3,\,-m,\,m,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\Big/$$
$$\left(4\,a\,c\,\text{AppellF1}\left[3,\,-m,\,m,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]+m\,x\right.$$
$$\left.\left(b\,c\,\text{AppellF1}\left[4,\,1-m,\,m,\,5,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]-a\,d\,\text{AppellF1}\left[4,\,-m,\,1+m,\,5,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\right)+$$
$$\left(5\,a\,c\,f^3\,x^4\,\text{AppellF1}\left[4,\,-m,\,m,\,5,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\Big/$$
$$\left(20\,a\,c\,\text{AppellF1}\left[4,\,-m,\,m,\,5,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]+4\,b\,c\,m\,x\,\text{AppellF1}\left[5,\,1-m,\,m,\,6,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]-\right.$$
$$\left.4\,a\,d\,m\,x\,\text{AppellF1}\left[5,\,-m,\,1+m,\,6,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)-\frac{1}{d\,(-1+m)}$$
$$\left.e^3\,\left(\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right)^{-m}\,(c+d\,x)\,\text{Hypergeometric2F1}\left[1-m,\,-m,\,2-m,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)$$

Problem 3050: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 250 leaves, 4 steps):

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

Result (type 6, 320 leaves):

$$(a+b x)^m (c+d x)^{-m}\left(\left(3 a c e f x^2 \text{AppellF1}\left[2,-m,m,3,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\Big/\left(3 a c \text{AppellF1}\left[2,-m,m,3,-\frac{b x}{a},-\frac{d x}{c}\right]+m x\left(b c \text{AppellF1}\left[3,1-m,m,4,-\frac{b x}{a},-\frac{d x}{c}\right]-a d \text{AppellF1}\left[3,-m,1+m,4,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\right)+\left(4 a c f^2 x^3 \text{AppellF1}\left[3,-m,m,4,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\Big/\left(12 a c \text{AppellF1}\left[3,-m,m,4,-\frac{b x}{a},-\frac{d x}{c}\right]+3 b c m x \text{AppellF1}\left[4,1-m,m,5,-\frac{b x}{a},-\frac{d x}{c}\right]-3 a d m x \text{AppellF1}\left[4,-m,1+m,5,-\frac{b x}{a},-\frac{d x}{c}\right]\right)-\frac{1}{d(-1+m)} e^2\left(\frac{d(a+b x)}{-b c+a d}\right)^{-m}(c+d x) \text{Hypergeometric2F1}\left[1-m,-m,2-m,\frac{b(c+d x)}{b c-a d}\right]\right)$$

Problem 3051: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 135 leaves, 3 steps):

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

Result (type 6, 201 leaves):

$$(a+b x)^m (c+d x)^{-m}\left(\left(3 a c f x^2 \text{AppellF1}\left[2,-m,m,3,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\Big/\left(6 a c \text{AppellF1}\left[2,-m,m,3,-\frac{b x}{a},-\frac{d x}{c}\right]+2 m x\left(b c \text{AppellF1}\left[3,1-m,m,4,-\frac{b x}{a},-\frac{d x}{c}\right]-a d \text{AppellF1}\left[3,-m,1+m,4,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\right)-\frac{1}{d(-1+m)} e\left(\frac{d(a+b x)}{-b c+a d}\right)^{-m}(c+d x) \text{Hypergeometric2F1}\left[1-m,-m,2-m,\frac{b(c+d x)}{b c-a d}\right]\right)$$

Problem 3053: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

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

$$-\frac{(a+b x)^m (c+d x)^{-m} \text{Hypergeometric2F1}\left[1, m, 1+m, \frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}\right]}{f m}+\frac{1}{f m}(a+b x)^m (c+d x)^{-m} \left(\frac{b (c+d x)}{b c-a d}\right)^m \text{Hypergeometric2F1}\left[m, m, 1+m, -\frac{d (a+b x)}{b c-a d}\right]$$

Result (type 6, 292 leaves):

$$-\left(\left((b c-a d) (b e-a f)^2 (2+m) (a+b x)^{1+m} (c+d x)^{-m} \text{AppellF1}\left[1+m, m, 1, 2+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]\right) \Big/ \left(b (-b e+a f) (1+m) (e+f x) \left((b c-a d) (b e-a f) (2+m) \text{AppellF1}\left[1+m, m, 1, 2+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]+(a+b x) \left((-b c f+a d f) \text{AppellF1}\left[2+m, m, 2, 3+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]+d (-b e+a f) m \text{AppellF1}\left[2+m, 1+m, 1, 3+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)\right)$$

Problem 3055: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 174 leaves, 2 steps):

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

Result (type 5, 432 leaves):

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

Problem 3056: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 309 leaves, 4 steps):

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

Result (type 5, 1697 leaves):

$$\left((a+b x)^{1+m} (c+d x)^{1-m}\left(6 (b e-a f)^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)},1,m\right]+6 (b e-a f)^2 m \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)},1,m\right]+6 f (b e-a f) (a+b x) \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)},1,m\right]+\right.\right.$$

$$6 f (-b e + a f) m^2 (a + b x) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, m\right] +$$

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

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

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

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

$$6 (b e - a f)^2 \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 1 + m\right] -$$

$$6 (b e - a f)^2 m \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 1 + m\right] +$$

$$12 f (b e - a f) m (a + b x) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 1 + m\right] +$$

$$12 f (b e - a f) m^2 (a + b x) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 1 + m\right] +$$

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

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

$$6 f (-b e + a f) (a + b x) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 2 + m\right] +$$

$$12 f (-b e + a f) m (a + b x) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 2 + m\right] +$$

$$6 f (-b e + a f) m^2 (a + b x) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 2 + m\right] +$$

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

$$6 f^2 m^2 (a + b x)^2 \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 2 + m\right] +$$

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

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

$$5 f^2 m (a + b x)^2 \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 3 + m\right] -$$

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

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

$$\left(3 (1+m) (e+f x)^3 \left((b e-a f) (c+d x) \left(a^2 f^2 \left(2+3 m+m^2\right)+2 a b f (1+m) (-2 e+f m x)+\right.\right.\right.$$

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

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

$$d \left(2 e^2-2 e f (2+m) x+f^2 m x^2\right))+b^2 \left(c f \left(-2 e^2 (3+2 m)+2 e f m (3+m) x-\right.\right.$$

$$\left.\left.\left. f^2 (-1+m) m x^2\right)+d e \left(2 e^2-4 e f (1+2 m) x+f^2 m (1+3 m) x^2\right)\right)\right)$$

$$\text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 1+m\right]+f (1+m) (a+b x)$$

$$\left((a f (2+m) (-2 d e+3 c f+d f x)+b c f (-e (6+m)+2 f m x)+b d e (4 e-f (2+3 m) x))\right.$$

$$\text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 2+m\right]+$$

$$\left.\left.\left.\left. f (d e-c f) (2+m) (a+b x) \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]\right)\right)\right)\right)$$

Problem 3057: Result unnecessarily involves higher level functions.

$$\int \frac{(1+2 x)^{-m} (2+3 x)^m}{(5-4 x)^5} \, dx$$

Optimal (type 5, 179 leaves, 5 steps):

$$\frac{(1+2 x)^{1-m} (2+3 x)^{1+m}}{322 (5-4 x)^4}+\frac{(66+m) (1+2 x)^{1-m} (2+3 x)^{1+m}}{77763 (5-4 x)^3}+$$

$$\frac{\left(4359+220 m+2 m^2\right) (1+2 x)^{1-m} (2+3 x)^{1+m}}{25039686 (5-4 x)^2}+\left(\left(32010+4358 m+132 m^2+m^3\right) (1+2 x)^{1-m}\right.$$

$$\left.(2+3 x)^{-1+m} \text{Hypergeometric2F1}\left[2, 1-m, 2-m, \frac{23 (1+2 x)}{14 (2+3 x)}\right]\right) \Big/ (2453889228 (1-m))$$

Result (type 6, 153 leaves):

$$\left(15\times 2^{-4-m}\,(2+4x)^{-m}\,(8+12x)^m\,\text{AppellF1}\left[4,-m,m,5,\frac{23}{15-12x},\frac{7}{5-4x}\right]\right)\Big/$$
$$\left((-5+4x)^3\left(15\,(-5+4x)\,\text{AppellF1}\left[4,-m,m,5,\frac{23}{15-12x},\frac{7}{5-4x}\right]+\right.\right.$$
$$m\left(23\,\text{AppellF1}\left[5,1-m,m,6,\frac{23}{15-12x},\frac{7}{5-4x}\right]-\right.$$
$$\left.\left.\left.21\,\text{AppellF1}\left[5,-m,1+m,6,\frac{23}{15-12x},\frac{7}{5-4x}\right]\right)\right)\right)$$

Problem 3058: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^m\,(c+d x)^{-1-m}\,(e+f x)^p\,dx$$

Optimal (type 6, 130 leaves, 3 steps):

$$\left((a+b x)^{1+m}\,(c+d x)^{-m}\left(\frac{b\,(c+d x)}{b c-a d}\right)^m (e+f x)^p\left(\frac{b\,(e+f x)}{b e-a f}\right)^{-p}\right.$$
$$\left.\text{AppellF1}\left[1+m,1+m,-p,2+m,-\frac{d\,(a+b x)}{b c-a d},-\frac{f\,(a+b x)}{b e-a f}\right]\right)\Big/\left((b c-a d)\,(1+m)\right)$$

Result (type 6, 300 leaves):

$$\left((b c-a d)\,(b e-a f)\,(2+m)\,(a+b x)^{1+m}\,(c+d x)^{-1-m}\right.$$
$$\left.(e+f x)^p\,\text{AppellF1}\left[1+m,1+m,-p,2+m,\frac{d\,(a+b x)}{-b c+a d},\frac{f\,(a+b x)}{-b e+a f}\right]\right)\Big/$$
$$\left(b\,(1+m)\left((b c-a d)\,(b e-a f)\,(2+m)\,\text{AppellF1}\left[1+m,1+m,-p,2+m,\frac{d\,(a+b x)}{-b c+a d},\frac{f\,(a+b x)}{-b e+a f}\right]-\right.\right.$$
$$(a+b x)\left((-b c+a d)\,f\,p\,\text{AppellF1}\left[2+m,1+m,1-p,3+m,\frac{d\,(a+b x)}{-b c+a d},\frac{f\,(a+b x)}{-b e+a f}\right]+\right.$$
$$\left.\left.\left.d\,(b e-a f)\,(1+m)\,\text{AppellF1}\left[2+m,2+m,-p,3+m,\frac{d\,(a+b x)}{-b c+a d},\frac{f\,(a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3059: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (5-4x)^3\,(1+2x)^{-1-m}\,(2+3x)^m\,dx$$

Optimal (type 5, 142 leaves, 3 steps):

$$-\frac{2}{9}\,(5-4x)^2\,(1+2x)^{-m}\,(2+3x)^{1+m}-$$
$$\frac{(1+2x)^{-m}\,(2+3x)^{1+m}\,\left(9261-512\,m+4\,m^2-4\,(109-2\,m)\,m\,x\right)}{27\,m}+\frac{1}{27\,(1-m)\,m}$$
$$2^{-1-m}\,\left(27\,783-8324\,m+390\,m^2-4\,m^3\right)\,(1+2x)^{1-m}\,\text{Hypergeometric2F1}\left[1-m,-m,2-m,-3\,(1+2x)\right]$$

Result (type 6, 395 leaves):

$$\frac{7}{4}\left(\left(483\,(5-4x)^2\,(4+8x)^{-m}\,(8+12x)^m\,\text{AppellF1}\left[2,\,-m,\,m,\,3,\,\frac{3}{23}(5-4x),\,\frac{1}{7}(5-4x)\right]\right)\Big/\left(483\,\text{AppellF1}\left[2,\,-m,\,m,\,3,\,\frac{3}{23}(5-4x),\,\frac{1}{7}(5-4x)\right]+m\,(-5+4x)\left(21\,\text{AppellF1}\left[3,\,1-m,\,m,\,4,\,\frac{3}{23}(5-4x),\,\frac{1}{7}(5-4x)\right]-23\,\text{AppellF1}\left[3,\,-m,\,1+m,\,4,\,\frac{3}{23}(5-4x),\,\frac{1}{7}(5-4x)\right]\right)\right)-\left(23\times 2^{3+m}\,(2+3x)^m\,(-5+4x)^3\,(2+4x)^{-m}\,\text{AppellF1}\left[3,\,-m,\,m,\,4,\,-\frac{3}{23}(-5+4x),\,\frac{1}{7}(5-4x)\right]\right)\Big/\left(3\left(644\,\text{AppellF1}\left[3,\,-m,\,m,\,4,\,\frac{3}{23}(5-4x),\,\frac{1}{7}(5-4x)\right]+m\,(-5+4x)\left(21\,\text{AppellF1}\left[4,\,1-m,\,m,\,5,\,\frac{3}{23}(5-4x),\,\frac{1}{7}(5-4x)\right]-23\,\text{AppellF1}\left[4,\,-m,\,1+m,\,5,\,\frac{3}{23}(5-4x),\,\frac{1}{7}(5-4x)\right]\right)\right)\right)+\frac{7\times 2^{2-m}\,(1+2x)^{1-m}\,\text{Hypergeometric2F1}[1-m,\,-m,\,2-m,\,-3-6x]}{-1+m}-\frac{1}{1+m}196\,(-3-6x)^m\,(1+2x)^{-m}\,(2+3x)^{1+m}\,\text{Hypergeometric2F1}[1+m,\,1+m,\,2+m,\,4+6x]\right)$$

Problem 3060: Result unnecessarily involves higher level functions.

$$\int (5-4x)^2\,(1+2x)^{-1-m}\,(2+3x)^m\,dx$$

Optimal (type 5, 121 leaves, 3 steps):

$$-\frac{7\,(21-m)\,(1+2x)^{-m}\,(2+3x)^{1+m}}{3\,m}-\frac{1}{3}(5-4x)\,(1+2x)^{-m}\,(2+3x)^{1+m}+\frac{1}{3\,(1-m)\,m}2^{-1-m}\left(441-86\,m+2\,m^2\right)(1+2x)^{1-m}\,\text{Hypergeometric2F1}\left[1-m,\,-m,\,2-m,\,-3\,(1+2x)\right]$$

Result (type 6, 241 leaves):

$$\frac{7}{4}\left(\left(69\,(5-4x)^2\,(4+8x)^{-m}\,(8+12x)^m\,\text{AppellF1}\left[2,-m,m,3,\frac{3}{23}(5-4x),\frac{1}{7}(5-4x)\right]\right)\Big/\left(483\,\text{AppellF1}\left[2,-m,m,3,\frac{3}{23}(5-4x),\frac{1}{7}(5-4x)\right]+m\,(-5+4x)\left(21\,\text{AppellF1}\left[3,1-m,m,4,\frac{3}{23}(5-4x),\frac{1}{7}(5-4x)\right]-23\,\text{AppellF1}\left[3,-m,1+m,4,\frac{3}{23}(5-4x),\frac{1}{7}(5-4x)\right]\right)\right)+\frac{2^{2-m}\,(1+2x)^{1-m}\,\text{Hypergeometric2F1}[1-m,-m,2-m,-3-6x]}{-1+m}-\frac{1}{1+m}28\,(-3-6x)^m\,(1+2x)^{-m}\,(2+3x)^{1+m}\,\text{Hypergeometric2F1}[1+m,1+m,2+m,4+6x]\right)$$

Problem 3063: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+bx)^m\,(c+dx)^{-1-m}}{e+fx}\,dx$$

Optimal (type 5, 72 leaves, 1 step):

$$-\frac{(a+bx)^m\,(c+dx)^{-m}\,\text{Hypergeometric2F1}\left[1,-m,1-m,\frac{(be-af)\,(c+dx)}{(de-cf)\,(a+bx)}\right]}{(de-cf)\,m}$$

Result (type 6, 362 leaves):

$$\frac{1}{de-cf}(a+bx)^m\,(c+dx)^{-m}\left(\left(\left(bc-ad\right)f\,(be-af)^2\,(2+m)\,(a+bx)\,\text{AppellF1}\left[1+m,m,1,2+m,\frac{d(a+bx)}{-bc+ad},\frac{f(a+bx)}{-be+af}\right]\right)\Big/\left(b\,(-be+af)\,(1+m)\,(e+fx)\left((bc-ad)\,(be-af)\,(2+m)\,\text{AppellF1}\left[1+m,m,1,2+m,\frac{d(a+bx)}{-bc+ad},\frac{f(a+bx)}{-be+af}\right]+(a+bx)\left((-bcf+adf)\,\text{AppellF1}\left[2+m,m,2,3+m,\frac{d(a+bx)}{-bc+ad},\frac{f(a+bx)}{-be+af}\right]+d\,(-be+af)\,m\,\text{AppellF1}\left[2+m,1+m,1,3+m,\frac{d(a+bx)}{-bc+ad},\frac{f(a+bx)}{-be+af}\right]\right)\right)\right)-\frac{\left(\frac{d(a+bx)}{-bc+ad}\right)^{-m}\text{Hypergeometric2F1}\left[-m,-m,1-m,\frac{b(c+dx)}{bc-ad}\right]}{m}\right)$$

Problem 3065: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 283 leaves, 4 steps):

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

Result (type 5, 2361 leaves):

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

$$2 f^2 m^3 (a+b x)^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 2+m\right] +$$
$$2 f^2 (a+b x)^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right] +$$
$$5 f^2 m (a+b x)^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right] +$$
$$4 f^2 m^2 (a+b x)^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right] +$$
$$f^2 m^3 (a+b x)^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]\Big)\Big)\Big/$$
$$\Big(2 (-b e+a f)^3 (1+m) (e+f x)^2 \Big(b^3 c e^3 - a b^2 c e^2 f + b^3 d e^3 x + 2 b^3 c e^2 f x - a b^2 d e^2 f x -$$
$$2 a b^2 c e f^2 x + 2 b^3 d e^2 f x^2 + b^3 c e f^2 x^2 - 2 a b^2 d e f^2 x^2 - a b^2 c f^3 x^2 + b^3 d e f^2 x^3 -$$
$$a b^2 d f^3 x^3 - f (-b e+a f) (1+m) (a+b x) (c+d x) (a f (2+m) + b (-2 e+f m x))$$
$$\text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 1+m\right] + f (1+m) (a+b x)^2$$
$$(a f (2+m) (-d e+2 c f+d f x) + b c f (-e (4+m) + f m x) + 2 b d e (e-f (1+m) x))$$
$$\text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 2+m\right] +$$
$$2 a^3 d e f^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right] -$$
$$2 a^3 c f^3 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right] +$$
$$3 a^3 d e f^2 m \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right] -$$
$$3 a^3 c f^3 m \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right] +$$
$$a^3 d e f^2 m^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right] -$$
$$a^3 c f^3 m^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right] +$$
$$6 a^2 b d e f^2 x \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right] -$$
$$6 a^2 b c f^3 x \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right] +$$
$$9 a^2 b d e f^2 m x \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right] -$$
$$9 a^2 b c f^3 m x \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right] +$$

$$3\,a^2\,b\,d\,e\,f^2\,m^2\,x\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]-$$
$$3\,a^2\,b\,c\,f^3\,m^2\,x\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]+$$
$$6\,a\,b^2\,d\,e\,f^2\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]-$$
$$6\,a\,b^2\,c\,f^3\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]+$$
$$9\,a\,b^2\,d\,e\,f^2\,m\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]-$$
$$9\,a\,b^2\,c\,f^3\,m\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]+$$
$$3\,a\,b^2\,d\,e\,f^2\,m^2\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]-$$
$$3\,a\,b^2\,c\,f^3\,m^2\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]+$$
$$2\,b^3\,d\,e\,f^2\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]-$$
$$2\,b^3\,c\,f^3\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]+$$
$$3\,b^3\,d\,e\,f^2\,m\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]-$$
$$3\,b^3\,c\,f^3\,m\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]+$$
$$b^3\,d\,e\,f^2\,m^2\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]-$$
$$b^3\,c\,f^3\,m^2\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]\Bigg)\Bigg)\Bigg)$$

Problem 3066: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 498 leaves, 5 steps):

$$-\frac{f\,(a+b\,x)^{1+m}\,(c+d\,x)^{-m}}{3\,(b\,e-a\,f)\,(d\,e-c\,f)\,(e+f\,x)^3}-\frac{f\,(b\,(5\,d\,e-c\,f\,(2-m))-a\,d\,f\,(3+m))\,(a+b\,x)^{1+m}\,(c+d\,x)^{-m}}{6\,(b\,e-a\,f)^2\,(d\,e-c\,f)^2\,(e+f\,x)^2}-$$
$$\Big(f\,\big(a^2\,d^2\,f^2\,(6+5\,m+m^2)-a\,b\,d\,f\,(d\,e\,(15+8\,m)-c\,f\,(3-2\,m-2\,m^2))+$$
$$b^2\,(11\,d^2\,e^2-c\,d\,e\,f\,(7-8\,m)+c^2\,f^2\,(2-3\,m+m^2))\big)\,(a+b\,x)^{1+m}\,(c+d\,x)^{-m}\Big)\Big/$$
$$\Big(6\,(b\,e-a\,f)^3\,(d\,e-c\,f)^3\,(e+f\,x)\Big)+\Big(\big(3\,a\,b^2\,d\,f\,(1+m)\,(6\,d^2\,e^2+6\,c\,d\,e\,f\,m-c^2\,f^2\,(1-m)\,m)-$$
$$3\,a^2\,b\,d^2\,f^2\,(3\,d\,e+c\,f\,m)\,(2+3\,m+m^2)+a^3\,d^3\,f^3\,(6+11\,m+6\,m^2+m^3)-$$
$$b^3\,(6\,d^3\,e^3+18\,c\,d^2\,e^2\,f\,m-9\,c^2\,d\,e\,f^2\,(1-m)\,m+c^3\,f^3\,m\,(2-3\,m+m^2))\big)\,(a+b\,x)^m\,(c+d\,x)^{-m}$$
$$\text{Hypergeometric2F1}\Big[1,\,-m,\,1-m,\,\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\Big]\Big)\Big/\Big(6\,(b\,e-a\,f)^3\,(d\,e-c\,f)^4\,m\Big)$$

Result (type 5, 7153 leaves):

$$\Big((a+b\,x)^{1+m}\,(c+d\,x)^{-m}$$
$$\Big(-\big(a^3\,f^3\,(6+11\,m+6\,m^2+m^3)+3\,a^2\,b\,f^2\,(2+3\,m+m^2)\,(-3\,e+f\,m\,x)+3\,a\,b^2\,f\,(1+m)$$
$$(6\,e^2-6\,e\,f\,m\,x+f^2\,(-1+m)\,m\,x^2)+b^3$$
$$(-6\,e^3+18\,e^2\,f\,m\,x-9\,e\,f^2\,(-1+m)\,m\,x^2+f^3\,m\,(2-3\,m+m^2)\,x^3)\big)$$
$$\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,1+m\Big]+f\,(1+m)\,(a+b\,x)$$
$$\Big(3\,(a^2\,f^2\,(6+5\,m+m^2)+2\,a\,b\,f\,(2+m)\,(-3\,e+f\,m\,x)+b^2\,(6\,e^2-6\,e\,f\,m\,x+f^2\,(-1+m)\,m\,x^2))$$
$$\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,2+m\Big]-f\,(2+m)\,(a+b\,x)$$
$$\Big(3\,(a\,f\,(3+m)+b\,(-3\,e+f\,m\,x))\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\Big]-$$
$$f\,(3+m)\,(a+b\,x)\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,4+m\Big]\Big)\Big)\Big)\Big)\Big/$$
$$\Big(3\,(e+f\,x)^3\,\Big(2\,b^4\,c\,e^4-2\,a\,b^3\,c\,e^3\,f+2\,b^4\,d\,e^4\,x+6\,b^4\,c\,e^3\,f\,x-2\,a\,b^3\,d\,e^3\,f\,x-$$
$$6\,a\,b^3\,c\,e^2\,f^2\,x+6\,b^4\,d\,e^3\,f\,x^2+6\,b^4\,c\,e^2\,f^2\,x^2-$$
$$6\,a\,b^3\,d\,e^2\,f^2\,x^2-6\,a\,b^3\,c\,e\,f^3\,x^2+6\,b^4\,d\,e^2\,f^2\,x^3+$$
$$2\,b^4\,c\,e\,f^3\,x^3-6\,a\,b^3\,d\,e\,f^3\,x^3-2\,a\,b^3\,c\,f^4\,x^3+2\,b^4\,d\,e\,f^3\,x^4-$$
$$2\,a\,b^3\,d\,f^4\,x^4-f\,(b\,e-a\,f)\,(1+m)\,(a+b\,x)\,(c+d\,x)$$
$$(a^2\,f^2\,(6+5\,m+m^2)+2\,a\,b\,f\,(2+m)\,(-3\,e+f\,m\,x)+b^2\,(6\,e^2-6\,e\,f\,m\,x+f^2\,(-1+m)\,m\,x^2))$$
$$\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,1+m\Big]-$$
$$f\,(1+m)\,(a+b\,x)^2\,(a^2\,f^2\,(6+5\,m+m^2)\,(-d\,e+3\,c\,f+2\,d\,f\,x)+$$
$$2\,a\,b\,f\,(2+m)\,(c\,f\,(-e\,(9+m)+2\,f\,m\,x)+d\,(3\,e^2-2\,e\,f\,(3+m)\,x+f^2\,m\,x^2))+$$
$$b^2\,(c\,f\,(6\,e^2\,(3+m)-2\,e\,f\,m\,(5+m)\,x+f^2\,(-1+m)\,m\,x^2)-$$
$$3\,d\,e\,(2\,e^2-4\,e\,f\,(1+m)\,x+f^2\,m\,(1+m)\,x^2)))$$

$$\text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 2+m\right]+12 a^3 b d e^2 f^2$$
$$\text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]-$$
$$18 a^3 b c e f^3 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]-$$
$$12 a^4 d e f^3 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]+$$
$$18 a^4 c f^4 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]+$$
$$18 a^3 b d e^2 f^2 m \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]-$$
$$29 a^3 b c e f^3 m \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]-$$
$$22 a^4 d e f^3 m \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]+$$
$$33 a^4 c f^4 m \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]+$$
$$6 a^3 b d e^2 f^2 m^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]-$$
$$12 a^3 b c e f^3 m^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]-$$
$$12 a^4 d e f^3 m^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]+$$
$$18 a^4 c f^4 m^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]-$$
$$a^3 b c e f^3 m^3 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]-$$
$$2 a^4 d e f^3 m^3 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]+$$
$$3 a^4 c f^4 m^3 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]+$$
$$36 a^2 b^2 d e^2 f^2 x \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]-$$
$$54 a^2 b^2 c e f^3 x \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]-$$
$$42 a^3 b d e f^3 x \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]+$$

$$54\, a^3\, b\, c\, f^4\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] +$$

$$6\, a^4\, d\, f^4\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] +$$

$$54\, a^2\, b^2\, d\, e^2\, f^2\, m\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] -$$

$$87\, a^2\, b^2\, c\, e\, f^3\, m\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] -$$

$$81\, a^3\, b\, d\, e\, f^3\, m\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] +$$

$$103\, a^3\, b\, c\, f^4\, m\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] +$$

$$11\, a^4\, d\, f^4\, m\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] +$$

$$18\, a^2\, b^2\, d\, e^2\, f^2\, m^2\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] -$$

$$36\, a^2\, b^2\, c\, e\, f^3\, m^2\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] -$$

$$48\, a^3\, b\, d\, e\, f^3\, m^2\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] +$$

$$60\, a^3\, b\, c\, f^4\, m^2\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] +$$

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

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

$$9\, a^3\, b\, d\, e\, f^3\, m^3\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] +$$

$$11\, a^3\, b\, c\, f^4\, m^3\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] +$$

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

$$36\, a\, b^3\, d\, e^2\, f^2\, x^2\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] -$$

$$54\, a\, b^3\, c\, e\, f^3\, x^2\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] -$$

$$54\, a^2\, b^2\, d\, e\, f^3\, x^2\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 3 + m\right] +$$

$54\,a^2\,b^2\,c\,f^4\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$18\,a^3\,b\,d\,f^4\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$54\,a\,b^3\,d\,e^2\,f^2\,m\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]-$

$87\,a\,b^3\,c\,e\,f^3\,m\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]-$

$111\,a^2\,b^2\,d\,e\,f^3\,m\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$111\,a^2\,b^2\,c\,f^4\,m\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$33\,a^3\,b\,d\,f^4\,m\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$18\,a\,b^3\,d\,e^2\,f^2\,m^2\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]-$

$36\,a\,b^3\,c\,e\,f^3\,m^2\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]-$

$72\,a^2\,b^2\,d\,e\,f^3\,m^2\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$72\,a^2\,b^2\,c\,f^4\,m^2\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$18\,a^3\,b\,d\,f^4\,m^2\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]-$

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

$15\,a^2\,b^2\,d\,e\,f^3\,m^3\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$15\,a^2\,b^2\,c\,f^4\,m^3\,x^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

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

$12\,b^4\,d\,e^2\,f^2\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]-$

$18\,b^4\,c\,e\,f^3\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]-$

$30\,a\,b^3\,d\,e\,f^3\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$18\,a\,b^3\,c\,f^4\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$18\,a^2\,b^2\,d\,f^4\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$18\,b^4\,d\,e^2\,f^2\,m\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]-$

$29\,b^4\,c\,e\,f^3\,m\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]-$

$67\,a\,b^3\,d\,e\,f^3\,m\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$45\,a\,b^3\,c\,f^4\,m\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$33\,a^2\,b^2\,d\,f^4\,m\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

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

$12\,b^4\,c\,e\,f^3\,m^2\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]-$

$48\,a\,b^3\,d\,e\,f^3\,m^2\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$36\,a\,b^3\,c\,f^4\,m^2\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$18\,a^2\,b^2\,d\,f^4\,m^2\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]-$

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

$11\,a\,b^3\,d\,e\,f^3\,m^3\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$9\,a\,b^3\,c\,f^4\,m^3\,x^3\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

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

$6\,b^4\,d\,e\,f^3\,x^4\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$6\,a\,b^3\,d\,f^4\,x^4\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]-$

$15\,b^4\,d\,e\,f^3\,m\,x^4\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$

$$4 b^4 c f^4 m x^4 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]+$$
$$11 a b^3 d f^4 m x^4 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]-$$
$$12 b^4 d e f^3 m^2 x^4 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]+$$
$$6 b^4 c f^4 m^2 x^4 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]+$$
$$6 a b^3 d f^4 m^2 x^4 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]-$$
$$3 b^4 d e f^3 m^3 x^4 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]+$$
$$2 b^4 c f^4 m^3 x^4 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]+$$
$$a b^3 d f^4 m^3 x^4 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 3+m\right]+$$
$$6 a^4 d e f^3 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 4+m\right]-$$
$$6 a^4 c f^4 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 4+m\right]+$$
$$11 a^4 d e f^3 m \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 4+m\right]-$$
$$11 a^4 c f^4 m \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 4+m\right]+$$
$$6 a^4 d e f^3 m^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 4+m\right]-$$
$$6 a^4 c f^4 m^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 4+m\right]+$$
$$a^4 d e f^3 m^3 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 4+m\right]-$$
$$a^4 c f^4 m^3 \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 4+m\right]+$$
$$24 a^3 b d e f^3 x \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 4+m\right]-$$
$$24 a^3 b c f^4 x \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 4+m\right]+$$
$$44 a^3 b d e f^3 m x \text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}, 1, 4+m\right]-$$

$$44\, a^3\, b\, c\, f^4\, m\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] +$$

$$24\, a^3\, b\, d\, e\, f^3\, m^2\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] -$$

$$24\, a^3\, b\, c\, f^4\, m^2\, x\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] +$$

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

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

$$36\, a^2\, b^2\, d\, e\, f^3\, x^2\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] -$$

$$36\, a^2\, b^2\, c\, f^4\, x^2\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] +$$

$$66\, a^2\, b^2\, d\, e\, f^3\, m\, x^2\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] -$$

$$66\, a^2\, b^2\, c\, f^4\, m\, x^2\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] +$$

$$36\, a^2\, b^2\, d\, e\, f^3\, m^2\, x^2\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] -$$

$$36\, a^2\, b^2\, c\, f^4\, m^2\, x^2\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] +$$

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

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

$$24\, a\, b^3\, d\, e\, f^3\, x^3\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] -$$

$$24\, a\, b^3\, c\, f^4\, x^3\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] +$$

$$44\, a\, b^3\, d\, e\, f^3\, m\, x^3\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] -$$

$$44\, a\, b^3\, c\, f^4\, m\, x^3\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] +$$

$$24\, a\, b^3\, d\, e\, f^3\, m^2\, x^3\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] -$$

$$24\, a\, b^3\, c\, f^4\, m^2\, x^3\, \text{HurwitzLerchPhi}\left[\frac{(d\, e - c\, f)\, (a + b\, x)}{(b\, e - a\, f)\, (c + d\, x)}, 1, 4 + m\right] +$$

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

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

$$6\,b^4\,d\,e\,f^3\,x^4\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,4+m\right]-$$

$$6\,b^4\,c\,f^4\,x^4\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,4+m\right]+$$

$$11\,b^4\,d\,e\,f^3\,m\,x^4\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,4+m\right]-$$

$$11\,b^4\,c\,f^4\,m\,x^4\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,4+m\right]+$$

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

$$6\,b^4\,c\,f^4\,m^2\,x^4\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,4+m\right]+$$

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

$$b^4\,c\,f^4\,m^3\,x^4\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,4+m\right]\Bigg)\Bigg)$$

Problem 3067: Result more than twice size of optimal antiderivative.

$$\int (a+b\,x)^m\,(c+d\,x)^{-2-m}\,(e+f\,x)^p\,dx$$

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

$$\left(b\,(a+b\,x)^{1+m}\,(c+d\,x)^{-m}\left(\frac{b\,(c+d\,x)}{b\,c-a\,d}\right)^m(e+f\,x)^p\left(\frac{b\,(e+f\,x)}{b\,e-a\,f}\right)^{-p}\right.$$
$$\left.\text{AppellF1}\left[1+m,\,2+m,\,-p,\,2+m,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d},\,-\frac{f\,(a+b\,x)}{b\,e-a\,f}\right]\right)\Big/\left((b\,c-a\,d)^2\,(1+m)\right)$$

Result (type 6, 300 leaves):

$$\left((b c-a d)\,(b e-a f)\,(2+m)\,(a+b x)^{1+m}\,(c+d x)^{-2-m}\,(e+f x)^p\,\text{AppellF1}\left[1+m,2+m,-p,2+m,\frac{d\,(a+b x)}{-b c+a d},\frac{f\,(a+b x)}{-b e+a f}\right]\right)\Big/\left(b\,(1+m)\left((b c-a d)\,(b e-a f)\,(2+m)\,\text{AppellF1}\left[1+m,2+m,-p,2+m,\frac{d\,(a+b x)}{-b c+a d},\frac{f\,(a+b x)}{-b e+a f}\right]-(a+b x)\left((-b c+a d)\,f\,p\,\text{AppellF1}\left[2+m,2+m,1-p,3+m,\frac{d\,(a+b x)}{-b c+a d},\frac{f\,(a+b x)}{-b e+a f}\right]+d\,(b e-a f)\,(2+m)\,\text{AppellF1}\left[2+m,3+m,-p,3+m,\frac{d\,(a+b x)}{-b c+a d},\frac{f\,(a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3068: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (5-4 x)^3\,(1+2 x)^{-2-m}\,(2+3 x)^m\,dx$$

Optimal (type 5, 132 leaves, 3 steps):

$$-\frac{1}{3}\,(5-4 x)^2\,(1+2 x)^{-1-m}\,(2+3 x)^{1+m}-\frac{(1+2 x)^{-1-m}\,(2+3 x)^{1+m}\,\left(2768-315 m+4 m^2-8\,(43-m)\,(1+m)\,x\right)}{9\,(1+m)}+\frac{1}{9 m}2^{-m}\,\left(1323-128 m+2 m^2\right)\,(1+2 x)^{-m}\,\text{Hypergeometric2F1}\left[-m,-m,1-m,-3\,(1+2 x)\right]$$

Result (type 6, 273 leaves):

$$\frac{7}{2}\left(-\frac{98\,(1+2 x)^{-1-m}\,(2+3 x)^{1+m}}{1+m}-\left(69\,(5-4 x)^2\,(2+4 x)^{-m}\,(4+6 x)^m\,\text{AppellF1}\left[2,-m,m,3,-\frac{3}{23}\,(-5+4 x),\frac{1}{7}\,(5-4 x)\right]\right)\Big/\left(483\,\text{AppellF1}\left[2,-m,m,3,\frac{3}{23}\,(5-4 x),\frac{1}{7}\,(5-4 x)\right]+m\,(-5+4 x)\left(21\,\text{AppellF1}\left[3,1-m,m,4,\frac{3}{23}\,(5-4 x),\frac{1}{7}\,(5-4 x)\right]-23\,\text{AppellF1}\left[3,-m,1+m,4,\frac{3}{23}\,(5-4 x),\frac{1}{7}\,(5-4 x)\right]\right)\right)+\frac{2^{3-m}\,(1+2 x)^{1-m}\,\text{Hypergeometric2F1}[1-m,-m,2-m,-3-6 x]}{1-m}+\frac{1}{1+m}84\,(-1-2 x)^m\,(1+2 x)^{-m}\,(2+3 x)\,(6+9 x)^m\,\text{Hypergeometric2F1}[1+m,1+m,2+m,4+6 x]\right)$$

Problem 3069: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 204 leaves, 4 steps):

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

Result (type 6, 300 leaves):

$$\frac{1}{3} (a+b x)^m (c+d x)^{-2-m} \left(\frac{3 e^2 (a+b x) (c+d x)}{(b c-a d) (1+m)}-\left(9 a c e f x^2 \text{AppellF1}\left[2,-m,2+m,3,-\frac{b x}{a},-\frac{d x}{c}\right]\right) \Big/ \left(-3 a c \text{AppellF1}\left[2,-m,2+m,3,-\frac{b x}{a},-\frac{d x}{c}\right]-b c m x \text{AppellF1}\left[3,1-m,2+m,4,-\frac{b x}{a},-\frac{d x}{c}\right]+a d (2+m) x \text{AppellF1}\left[3,-m,3+m,4,-\frac{b x}{a},-\frac{d x}{c}\right]\right)-\left(4 a c f^2 x^3 \text{AppellF1}\left[3,-m,2+m,4,-\frac{b x}{a},-\frac{d x}{c}\right]\right) \Big/ \left(-4 a c \text{AppellF1}\left[3,-m,2+m,4,-\frac{b x}{a},-\frac{d x}{c}\right]-b c m x \text{AppellF1}\left[4,1-m,2+m,5,-\frac{b x}{a},-\frac{d x}{c}\right]+a d (2+m) x \text{AppellF1}\left[4,-m,3+m,5,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\right)$$

Problem 3072: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 120 leaves, 2 steps):

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

Result (type 5, 578 leaves):

$$-\Bigg(\Bigg((a+b x)^{1+m} (c+d x)^{-2-m} \Bigg(6\,\text{HurwitzLerchPhi}\Big[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 2+m\Big] +$$
$$5\,m\,\text{HurwitzLerchPhi}\Big[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 2+m\Big] + m^2\,\text{HurwitzLerchPhi}\Big[$$
$$\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 2+m\Big] - \frac{3 f (a+b x)\,\text{HurwitzLerchPhi}\Big[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 2+m\Big]}{-b e+a f} -$$
$$\frac{f m (a+b x)\,\text{HurwitzLerchPhi}\Big[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 2+m\Big]}{-b e+a f} +$$
$$\Big((d e-c f) (a+b x)\,\text{Hypergeometric2F1}\Big[2, 3+m, 4+m, \frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}\Big]\Big)\Big/$$
$$((b e-a f) (c+d x)) - \Big(f (-d e+c f) (a+b x)^2$$
$$\text{Hypergeometric2F1}\Big[2, 3+m, 4+m, \frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}\Big]\Big)\Big/\Big((b e-a f)^2 (c+d x)\Big)\Bigg)\Bigg)\Bigg/$$
$$\Bigg((-b e+a f) (3+m) \Bigg(\frac{-a d (1+m)+b c (2+m)+b d x}{b c-a d} -$$
$$\frac{b (2+m) (e+f x)\,\text{HurwitzLerchPhi}\Big[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 2+m\Big]}{b e-a f} +$$
$$\Big(b (-d e+c f) (a+b x) (e+f x)\,\text{Hypergeometric2F1}\Big[2, 3+m, 4+m, \frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}\Big]\Big)\Big/$$
$$\Big((b e-a f)^2 (3+m) (c+d x)\Big)\Bigg)\Bigg)\Bigg)$$

Problem 3073: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 233 leaves, 4 steps):

$$-\frac{d (a d f (2+m)-b (d e+c f (1+m))) (a+b x)^{1+m} (c+d x)^{-1-m}}{(b c-a d) (b e-a f) (d e-c f)^2 (1+m)} -$$
$$\frac{f (a+b x)^{1+m} (c+d x)^{-1-m}}{(b e-a f) (d e-c f) (e+f x)} - \Big(f (a d f (2+m)-b (2 d e+c f m)) (a+b x)^m (c+d x)^{-m}$$
$$\text{Hypergeometric2F1}\Big[1, -m, 1-m, \frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\Big]\Big)\Big/\Big((b e-a f) (d e-c f)^3 m\Big)$$

Result (type 5, 21 480 leaves): Display of huge result suppressed!

Problem 3074: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 432 leaves, 5 steps):

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

Result (type 5, 57 971 leaves): Display of huge result suppressed!

Problem 3075: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 133 leaves, 3 steps):

$$\left(b^2 (a+b x)^{1+m} (c+d x)^{-m} \left(\frac{b (c+d x)}{b c-a d}\right)^m (e+f x)^p \left(\frac{b (e+f x)}{b e-a f}\right)^{-p} \text{AppellF1}\left[1+m,3+m,-p,2+m,-\frac{d (a+b x)}{b c-a d},-\frac{f (a+b x)}{b e-a f}\right]\right) \Big/ \left((b c-a d)^3 (1+m)\right)$$

Result (type 6, 300 leaves):

$$\left((b c-a d)(b e-a f)(2+m)(a+b x)^{1+m}(c+d x)^{-3-m}(e+f x)^{p}\,\text{AppellF1}\left[1+m,3+m,-p,2+m,\frac{d(a+b x)}{-b c+a d},\frac{f(a+b x)}{-b e+a f}\right]\right)\Big/\left(b(1+m)\left((b c-a d)(b e-a f)(2+m)\,\text{AppellF1}\left[1+m,3+m,-p,2+m,\frac{d(a+b x)}{-b c+a d},\frac{f(a+b x)}{-b e+a f}\right]-(a+b x)\left((-b c+a d) f p\,\text{AppellF1}\left[2+m,3+m,1-p,3+m,\frac{d(a+b x)}{-b c+a d},\frac{f(a+b x)}{-b e+a f}\right]+d(b e-a f)(3+m)\,\text{AppellF1}\left[2+m,4+m,-p,3+m,\frac{d(a+b x)}{-b c+a d},\frac{f(a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3076: Result unnecessarily involves higher level functions.

$$\int (5-4 x)^4 (1+2 x)^{-3-m} (2+3 x)^m \, dx$$

Optimal (type 5, 188 leaves, 4 steps):

$$-\frac{1}{9}(107-2 m)(5-4 x)^2(1+2 x)^{-2-m}(2+3 x)^{1+m}-\frac{1}{3}(5-4 x)^3(1+2 x)^{-2-m}(2+3 x)^{1+m}+\frac{1}{9\left(2+3 m+m^2\right)}7(1+2 x)^{-2-m}(2+3 x)^{1+m}\left(3\left(4638+485 m+108 m^2-2 m^3\right)+2\left(15209+1882 m-530 m^2+8 m^3\right) x\right)-\frac{1}{9 m}2^{2-m}\left(1323-85 m+m^2\right)(1+2 x)^{-m}\,\text{Hypergeometric2F1}[-m,-m,1-m,-3(1+2 x)]$$

Result (type 6, 318 leaves):

$$21\left(\frac{392(1+2 x)^{-1-m}(2+3 x)^{1+m}}{3+3 m}+\left(23(5-4 x)^2(2+4 x)^{-m}(4+6 x)^m\,\text{AppellF1}\left[2,-m,m,3,-\frac{3}{23}(-5+4 x),\frac{1}{7}(5-4 x)\right]\right)\Big/\left(483\,\text{AppellF1}\left[2,-m,m,3,\frac{3}{23}(5-4 x),\frac{1}{7}(5-4 x)\right]+m(-5+4 x)\left(21\,\text{AppellF1}\left[3,1-m,m,4,\frac{3}{23}(5-4 x),\frac{1}{7}(5-4 x)\right]-23\,\text{AppellF1}\left[3,-m,1+m,4,\frac{3}{23}(5-4 x),\frac{1}{7}(5-4 x)\right]\right)\right)+\frac{2^{2-m}(1+2 x)^{1-m}\,\text{Hypergeometric2F1}[1-m,-m,2-m,-3-6 x]}{-1+m}-\frac{1}{1+m}56(-3-6 x)^m(1+2 x)^{-m}(2+3 x)^{1+m}\,\text{Hypergeometric2F1}[1+m,1+m,2+m,4+6 x]-\frac{1}{1+m}1029(-1-2 x)^m(1+2 x)^{-m}(2+3 x)(6+9 x)^m\,\text{Hypergeometric2F1}[1+m,3+m,2+m,4+6 x]\right)$$

Problem 3078: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 205 leaves, 4 steps):

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

Result (type 6, 426 leaves):

$$\frac{1}{3} (a+b x)^m (c+d x)^{-3-m} \left(\left(6 e f \left(\frac{c (a+b x)}{a (c+d x)}\right)^{-m} (c+d x) \left(b^2 c^2 (1+m) x^2 \left(\frac{c (a+b x)}{a (c+d x)}\right)^m-a b c x \left(\frac{c (a+b x)}{a (c+d x)}\right)^m (-c m+d (2+m) x)+a^2 \left(d^2 x^2-c^2 \left(-1+\left(\frac{c (a+b x)}{a (c+d x)}\right)^m\right)-c d x \left(-2+2 \left(\frac{c (a+b x)}{a (c+d x)}\right)^m+m \left(\frac{c (a+b x)}{a (c+d x)}\right)^m\right)\right)\right)\right)\Big/\left(c (b c-a d)^2 (1+m) (2+m)\right)-\left(4 a c f^2 x^3 \text{AppellF1}\left[3,-m,3+m,4,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\Big/\left(-4 a c \text{AppellF1}\left[3,-m,3+m,4,-\frac{b x}{a},-\frac{d x}{c}\right]-b c m x \text{AppellF1}\left[4,1-m,3+m,5,-\frac{b x}{a},-\frac{d x}{c}\right]+a d (3+m) x \text{AppellF1}\left[4,-m,4+m,5,-\frac{b x}{a},-\frac{d x}{c}\right]\right)-\frac{1}{d (2+m)} 3 e^2 \left(\frac{d (a+b x)}{-b c+a d}\right)^{-m} (c+d x) \text{Hypergeometric2F1}\left[-2-m,-m,-1-m,\frac{b (c+d x)}{b c-a d}\right]\right)$$

Problem 3081: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 196 leaves, 4 steps):

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

Result (type 5, 12 578 leaves):

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

$$\left(1-\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right)^{-3-m}\Bigg(24\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$$

$$26\,m\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$$

$$9\,m^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]+$$

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

$$\frac{24\,f\,(a+b\,x)\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]}{b\,e-a\,f}+$$

$$\frac{14\,f\,m\,(a+b\,x)\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]}{b\,e-a\,f}+$$

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

$$\frac{8\,f^2\,(a+b\,x)^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,3+m\right]}{(b\,e-a\,f)^2}+$$

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

$$\left(5\,(d\,e-c\,f)\,(a+b\,x)\,\text{Hypergeometric2F1}\left[2,\,4+m,\,5+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/$$

$$\left((b\,e-a\,f)\,(c+d\,x)\right)+\Bigg(2\,(d\,e-c\,f)\,m\,(a+b\,x)$$

$$\text{Hypergeometric2F1}\left[2,\,4+m,\,5+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\Bigg)\Big/\left((b\,e-a\,f)\,(c+d\,x)\right)+$$

$$\left(8\,f\,(d\,e-c\,f)\,(a+b\,x)^2\,\text{Hypergeometric2F1}\left[2,\,4+m,\,5+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/$$

$$\left((b\,e-a\,f)^2\,(c+d\,x)\right)+\Bigg(2\,f\,(d\,e-c\,f)\,m\,(a+b\,x)^2$$

$$\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\Bigg)\Bigg/\left((b e-a f)^2(c+d x)\right)+$$

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

$$\left((b e-a f)^3(c+d x)\right)+$$

$$\left((d e-c f)(a+b x)\,\text{HypergeometricPFQ}\left[\{2,2,4+m\},\{1,5+m\},\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\right)\Big/$$

$$\left((b e-a f)(c+d x)\right)+\Bigg(2 f(d e-c f)(a+b x)^2\,\text{HypergeometricPFQ}\Big[$$

$$\{2,2,4+m\},\{1,5+m\},\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\Big]\Bigg)\Big/\left((b e-a f)^2(c+d x)\right)+$$

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

$$\left((b e-a f)^3(c+d x)\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(b(-b e+a f)(1+m)(2+m)(4+m)(e+f x)^2$$

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

$$(-b e-b f x)\left(1-\frac{d(a+b x)}{-b c+a d}\right)^{-3-m}\Bigg(\frac{24 b f\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)},1,3+m\right]}{b e-a f}+$$

$$\frac{14 b f m\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)},1,3+m\right]}{b e-a f}+$$

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

$$\frac{16 b f^2(a+b x)\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)},1,3+m\right]}{(b e-a f)^2}+$$

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

$$24 f(c+d x)\left(-\frac{d(d e-c f)(a+b x)}{(b e-a f)(c+d x)^2}+\frac{b(d e-c f)}{(b e-a f)(c+d x)}\right)$$

$$\left(\frac{1}{1-\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}}+(-3-m)\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)},1,3+m\right]\right)+$$

$$\frac{1}{d e - c f} 14 f m (c + d x) \left(-\frac{d (d e - c f) (a + b x)}{(b e - a f) (c + d x)^2} + \frac{b (d e - c f)}{(b e - a f) (c + d x)}\right)$$
$$\left(\frac{1}{1 - \frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}} + (-3 - m) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 3 + m\right]\right) +$$
$$\frac{1}{d e - c f} 2 f m^2 (c + d x) \left(-\frac{d (d e - c f) (a + b x)}{(b e - a f) (c + d x)^2} + \frac{b (d e - c f)}{(b e - a f) (c + d x)}\right)$$
$$\left(\frac{1}{1 - \frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}} + (-3 - m) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 3 + m\right]\right) +$$
$$\left(24 (b e - a f) (c + d x) \left(-\frac{d (d e - c f) (a + b x)}{(b e - a f) (c + d x)^2} + \frac{b (d e - c f)}{(b e - a f) (c + d x)}\right)\right.$$
$$\left.\left(\frac{1}{1 - \frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}} + (-3 - m) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 3 + m\right]\right)\right) \Big/$$
$$((d e - c f) (a + b x)) + \left(26 (b e - a f) m (c + d x)\right.$$
$$\left(-\frac{d (d e - c f) (a + b x)}{(b e - a f) (c + d x)^2} + \frac{b (d e - c f)}{(b e - a f) (c + d x)}\right) \left(\frac{1}{1 - \frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}} + (-3 - m)\right.$$
$$\left.\left.\text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 3 + m\right]\right)\right) \Big/ ((d e - c f) (a + b x)) +$$
$$\left(9 (b e - a f) m^2 (c + d x) \left(-\frac{d (d e - c f) (a + b x)}{(b e - a f) (c + d x)^2} + \frac{b (d e - c f)}{(b e - a f) (c + d x)}\right)\right.$$
$$\left.\left(\frac{1}{1 - \frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}} + (-3 - m) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 3 + m\right]\right)\right) \Big/$$
$$((d e - c f) (a + b x)) + \left((b e - a f) m^3 (c + d x) \left(-\frac{d (d e - c f) (a + b x)}{(b e - a f) (c + d x)^2} +\right.\right.$$
$$\left.\frac{b (d e - c f)}{(b e - a f) (c + d x)}\right) \left(\frac{1}{1 - \frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}} + (-3 - m) \text{HurwitzLerchPhi}\left[\right.\right.$$
$$\left.\left.\left.\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 3 + m\right]\right)\right) \Big/ ((d e - c f) (a + b x)) + \left(8 f^2 (a + b x)\right.$$
$$(c + d x) \left(-\frac{d (d e - c f) (a + b x)}{(b e - a f) (c + d x)^2} + \frac{b (d e - c f)}{(b e - a f) (c + d x)}\right) \left(\frac{1}{1 - \frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}} + (-3 - m)\right.$$

$$\text{HurwitzLerchPhi}\left[\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)},\,1,\,3+m\right]\Bigg)\Bigg)\Bigg/\left((b e-a f)\,(d e-c f)\right)+$$

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

$$\left(\frac{1}{1-\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}}+(-3-m)\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)},\,1,\,3+m\right]\right)\Bigg)\Bigg/$$

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

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

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

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

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

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

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

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

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

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

$$\left(5 d\,(d e-c f)\,(a+b x)\,\text{Hypergeometric2F1}\left[2,\,4+m,\,5+m,\,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]\right)\Bigg/$$

$$\left((b e-a f)\,(c+d x)^2\right)-\Bigg(2 d\,(d e-c f)\,m\,(a+b x)$$

$$\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\Bigg)\Bigg/\left((b e-a f)(c+d x)^2\right)-$$

$$\left(8 d f (d e-c f)(a+b x)^2\,\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\right)\Bigg/$$

$$\left((b e-a f)^2 (c+d x)^2\right)-\Bigg(2 d f (d e-c f)\, m\, (a+b x)^2$$

$$\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\Bigg)\Bigg/\left((b e-a f)^2 (c+d x)^2\right)-$$

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

$$\left((b e-a f)^3 (c+d x)^2\right)+\Bigg(5 b (d e-c f)$$

$$\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\Bigg)\Bigg/\left((b e-a f)(c+d x)\right)+$$

$$\left(2 b (d e-c f)\, m\,\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\right)\Bigg/$$

$$\left((b e-a f)(c+d x)\right)+\Bigg(16 b f (d e-c f)(a+b x)$$

$$\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\Bigg)\Bigg/\left((b e-a f)^2 (c+d x)\right)+$$

$$\left(4 b f (d e-c f)\, m\, (a+b x)\,\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\right)\Bigg/$$

$$\left((b e-a f)^2 (c+d x)\right)+\Bigg(9 b f^2 (d e-c f)(a+b x)^2$$

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

$$(4+m)\left(-\frac{d (d e-c f)(a+b x)}{(b e-a f)(c+d x)^2}+\frac{b (d e-c f)}{(b e-a f)(c+d x)}\right)\Bigg(-\Bigg(\Big((b e-a f)^2 (c+d x)^2$$

$$(b c e+a d e-2 a c f+2 b d e x-b c f x-a d f x)\Big)\Big/\left((-b c+a d)^3 (e+f x)^3\right)\Bigg)-$$

$$\text{HypergeometricPFQ}\left[\{2,2,4+m\},\{1,5+m\},\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\Bigg)+$$

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

$$\Bigg(-\Bigg(\Big((b e-a f)^2 (c+d x)^2 (b c e+a d e-2 a c f+2 b d e x-b c f x-a d f x)\Big)\Big/$$

$$\left((-b c+a d)^3 (e+f x)^3\right)\Bigg)-\text{HypergeometricPFQ}\Big[\{2,2,4+m\},$$

$$\{1,5+m\},\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\Big]\Bigg)+\frac{1}{(b e-a f)^2}f^2 (4+m)(a+b x)^2$$

$$\left(-\frac{d\,(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)^2}+\frac{b\,(d\,e-c\,f)}{(b\,e-a\,f)\,(c+d\,x)}\right)\Bigg(-\Bigg(\Big(\big((b\,e-a\,f)^2\,(c+d\,x)^2$$

$$(b\,c\,e+a\,d\,e-2\,a\,c\,f+2\,b\,d\,e\,x-b\,c\,f\,x-a\,d\,f\,x)\big)\Big/\left((-b\,c+a\,d)^3\,(e+f\,x)^3\right)\Bigg)-$$

$$\text{HypergeometricPFQ}\left[\{2,2,4+m\},\{1,5+m\},\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\Bigg)-$$

$$\Bigg(d\,(d\,e-c\,f)\,(a+b\,x)\,\text{HypergeometricPFQ}\Big[\{2,2,4+m\},\{1,5+m\},$$

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

$$\text{HypergeometricPFQ}\left[\{2,2,4+m\},\{1,5+m\},\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\Bigg)\Big/$$

$$\left((b\,e-a\,f)^2\,(c+d\,x)^2\right)-\Bigg(d\,f^2\,(d\,e-c\,f)\,(a+b\,x)^3\,\text{HypergeometricPFQ}\Big[$$

$$\{2,2,4+m\},\{1,5+m\},\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]\Bigg)\Big/\left((b\,e-a\,f)^3\,(c+d\,x)^2\right)+$$

$$\Bigg(b\,(d\,e-c\,f)\,\text{HypergeometricPFQ}\left[\{2,2,4+m\},\{1,5+m\},\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\Bigg)\Big/$$

$$\left((b\,e-a\,f)\,(c+d\,x)\right)+\Bigg(4\,b\,f\,(d\,e-c\,f)\,(a+b\,x)\,\text{HypergeometricPFQ}\Big[$$

$$\{2,2,4+m\},\{1,5+m\},\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]\Bigg)\Big/\left((b\,e-a\,f)^2\,(c+d\,x)\right)+$$

$$\Bigg(3\,b\,f^2\,(d\,e-c\,f)\,(a+b\,x)^2\,\text{HypergeometricPFQ}\Big[\{2,2,4+m\},\{1,5+m\},$$

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

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

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

$$\Bigg(24\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]+$$

$$26\,m\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]+$$

$$9\,m^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]+$$

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

$$\frac{24\,f\,(a+b\,x)\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]}{b\,e-a\,f}+$$

$$\frac{14\,f\,m\,(a+b\,x)\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]}{b\,e-a\,f}+$$

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

$$\frac{8\,f^2\,(a+b\,x)^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]}{(b\,e-a\,f)^2}+$$

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

$$\left(5\,(d\,e-c\,f)\,(a+b\,x)\,\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/$$

$$\left((b\,e-a\,f)\,(c+d\,x)\right)+\Bigg(2\,(d\,e-c\,f)\,m\,(a+b\,x)$$

$$\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\Bigg)\Big/\left((b\,e-a\,f)\,(c+d\,x)\right)+$$

$$\left(8\,f\,(d\,e-c\,f)\,(a+b\,x)^2\,\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/$$

$$\left((b\,e-a\,f)^2\,(c+d\,x)\right)+\Bigg(2\,f\,(d\,e-c\,f)\,m\,(a+b\,x)^2$$

$$\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\Bigg)\Big/\left((b\,e-a\,f)^2\,(c+d\,x)\right)+$$

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

$$\left((b\,e-a\,f)^3\,(c+d\,x)\right)+\Bigg((d\,e-c\,f)\,(a+b\,x)\,\text{HypergeometricPFQ}\Big[\{2,2,4+m\},$$

$$\{1,5+m\},\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]\Bigg)\Big/\left((b\,e-a\,f)\,(c+d\,x)\right)+\Bigg(2\,f\,(d\,e-c\,f)$$

$$(a+b\,x)^2\,\text{HypergeometricPFQ}\left[\{2,2,4+m\},\{1,5+m\},\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\Bigg)\Big/$$

$$\left((b\,e-a\,f)^2\,(c+d\,x)\right)+\Bigg(f^2\,(d\,e-c\,f)\,(a+b\,x)^3\,\text{HypergeometricPFQ}\Big[$$

$$\{2,2,4+m\},\{1,5+m\},\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]\Bigg)\Big/\left((b\,e-a\,f)^3\,(c+d\,x)\right)\Bigg)-$$

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

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

$$\left(24\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 3+m\right]+\right.$$

$$26\,m\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 3+m\right]+$$

$$9\,m^2\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 3+m\right]+$$

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

$$\frac{24 f (a+b x)\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 3+m\right]}{b e-a f}+$$

$$\frac{14 f m (a+b x)\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 3+m\right]}{b e-a f}+$$

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

$$\frac{8 f^2 (a+b x)^2\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 3+m\right]}{(b e-a f)^2}+$$

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

$$\left(5 (d e-c f) (a+b x)\,\text{Hypergeometric2F1}\left[2, 4+m, 5+m, \frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}\right]\right)\Big/$$

$$((b e-a f) (c+d x))+\left(2 (d e-c f) m (a+b x)\right.$$

$$\left.\text{Hypergeometric2F1}\left[2, 4+m, 5+m, \frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}\right]\right)\Big/((b e-a f) (c+d x))+$$

$$\left(8 f (d e-c f) (a+b x)^2\,\text{Hypergeometric2F1}\left[2, 4+m, 5+m, \frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}\right]\right)\Big/$$

$$\left((b e-a f)^2 (c+d x)\right)+\left(2 f (d e-c f) m (a+b x)^2\right.$$

$$\left.\text{Hypergeometric2F1}\left[2, 4+m, 5+m, \frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}\right]\right)\Big/\left((b e-a f)^2 (c+d x)\right)+$$

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

$$\left((b e-a f)^3 (c+d x)\right)+\left((d e-c f) (a+b x)\,\text{HypergeometricPFQ}[\{2, 2, 4+m\},\right.$$

$$\{1, 5+m\}, \frac{(d e - c f)(a+b x)}{(b e - a f)(c+d x)}\Big]\Big) \Big/ ((b e - a f)(c+d x)) + \Big(2 f (d e - c f)$$

$$(a+b x)^2 \text{HypergeometricPFQ}\Big[\{2, 2, 4+m\}, \{1, 5+m\}, \frac{(d e - c f)(a+b x)}{(b e - a f)(c+d x)}\Big]\Big) \Big/$$

$$((b e - a f)^2 (c+d x)) + \Big(f^2 (d e - c f)(a+b x)^3 \text{HypergeometricPFQ}\Big[$$

$$\{2, 2, 4+m\}, \{1, 5+m\}, \frac{(d e - c f)(a+b x)}{(b e - a f)(c+d x)}\Big]\Big) \Big/ ((b e - a f)^3 (c+d x))\Big) -$$

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

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

$$\Big(24 \text{HurwitzLerchPhi}\Big[\frac{(d e - c f)(a+b x)}{(b e - a f)(c+d x)}, 1, 3+m\Big] +$$

$$26 m \text{HurwitzLerchPhi}\Big[\frac{(d e - c f)(a+b x)}{(b e - a f)(c+d x)}, 1, 3+m\Big] +$$

$$9 m^2 \text{HurwitzLerchPhi}\Big[\frac{(d e - c f)(a+b x)}{(b e - a f)(c+d x)}, 1, 3+m\Big] +$$

$$m^3 \text{HurwitzLerchPhi}\Big[\frac{(d e - c f)(a+b x)}{(b e - a f)(c+d x)}, 1, 3+m\Big] +$$

$$\frac{24 f (a+b x) \text{HurwitzLerchPhi}\Big[\frac{(d e - c f)(a+b x)}{(b e - a f)(c+d x)}, 1, 3+m\Big]}{b e - a f} +$$

$$\frac{14 f m (a+b x) \text{HurwitzLerchPhi}\Big[\frac{(d e - c f)(a+b x)}{(b e - a f)(c+d x)}, 1, 3+m\Big]}{b e - a f} +$$

$$\frac{2 f m^2 (a+b x) \text{HurwitzLerchPhi}\Big[\frac{(d e - c f)(a+b x)}{(b e - a f)(c+d x)}, 1, 3+m\Big]}{b e - a f} +$$

$$\frac{8 f^2 (a+b x)^2 \text{HurwitzLerchPhi}\Big[\frac{(d e - c f)(a+b x)}{(b e - a f)(c+d x)}, 1, 3+m\Big]}{(b e - a f)^2} +$$

$$\frac{2 f^2 m (a+b x)^2 \text{HurwitzLerchPhi}\Big[\frac{(d e - c f)(a+b x)}{(b e - a f)(c+d x)}, 1, 3+m\Big]}{(b e - a f)^2} +$$

$$\Big(5 (d e - c f)(a+b x) \text{Hypergeometric2F1}\Big[2, 4+m, 5+m, \frac{(d e - c f)(a+b x)}{(b e - a f)(c+d x)}\Big]\Big) \Big/$$

$$((b e - a f)(c+d x)) + \Big(2 (d e - c f) m (a+b x)$$

$$\text{Hypergeometric2F1}\Big[2, 4+m, 5+m, \frac{(d e - c f)(a+b x)}{(b e - a f)(c+d x)}\Big]\Big) \Big/ ((b e - a f)(c+d x)) +$$

$$\left(8 f (d e - c f) (a + b x)^2 \text{Hypergeometric2F1}\left[2, 4 + m, 5 + m, \frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}\right]\right) \Big/ \left((b e - a f)^2 (c + d x)\right) + \left(2 f (d e - c f) m (a + b x)^2 \text{Hypergeometric2F1}\left[2, 4 + m, 5 + m, \frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}\right]\right) \Big/ \left((b e - a f)^2 (c + d x)\right) + \left(3 f^2 (d e - c f) (a + b x)^3 \text{Hypergeometric2F1}\left[2, 4 + m, 5 + m, \frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}\right]\right) \Big/ \left((b e - a f)^3 (c + d x)\right) + \left((d e - c f) (a + b x) \text{HypergeometricPFQ}\left[\{2, 2, 4 + m\}, \{1, 5 + m\}, \frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}\right]\right) \Big/ \left((b e - a f) (c + d x)\right) + \left(2 f (d e - c f) (a + b x)^2 \text{HypergeometricPFQ}\left[\{2, 2, 4 + m\}, \{1, 5 + m\}, \frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}\right]\right) \Big/ \left((b e - a f)^2 (c + d x)\right) + \left(f^2 (d e - c f) (a + b x)^3 \text{HypergeometricPFQ}\left[\{2, 2, 4 + m\}, \{1, 5 + m\}, \frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}\right]\right) \Big/ \left((b e - a f)^3 (c + d x)\right)\Bigg) -$$

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

$$\Bigg(24 \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 3 + m\right] + 26 m \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 3 + m\right] + 9 m^2 \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 3 + m\right] + m^3 \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 3 + m\right] + \frac{24 f (a + b x) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 3 + m\right]}{b e - a f} + \frac{14 f m (a + b x) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 3 + m\right]}{b e - a f} +$$

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

$$\frac{8\,f^2\,(a+b\,x)^2\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]}{(b\,e-a\,f)^2}+$$

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

$$\left(5\,(d\,e-c\,f)\,(a+b\,x)\,\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/$$

$$\left((b\,e-a\,f)\,(c+d\,x)\right)+\Big(2\,(d\,e-c\,f)\,m\,(a+b\,x)$$

$$\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\Big)\Big/\left((b\,e-a\,f)\,(c+d\,x)\right)+$$

$$\left(8\,f\,(d\,e-c\,f)\,(a+b\,x)^2\,\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/$$

$$\left((b\,e-a\,f)^2\,(c+d\,x)\right)+\Big(2\,f\,(d\,e-c\,f)\,m\,(a+b\,x)^2$$

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

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

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

$$\{1,5+m\},\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]\Big)\Big/\left((b\,e-a\,f)\,(c+d\,x)\right)+\Big(2\,f\,(d\,e-c\,f)$$

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

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

$$\{2,2,4+m\},\{1,5+m\},\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]\Big)\Big/\left((b\,e-a\,f)^3\,(c+d\,x)\right)\Bigg)+$$

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

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

$$\Bigg(24\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,3+m\right]+$$

$$26\,m\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)},1,3+m\right]+$$
$$9\,m^2\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)},1,3+m\right]+$$
$$m^3\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)},1,3+m\right]+$$
$$\frac{24\,f\,(a+b x)\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)},1,3+m\right]}{b e-a f}+$$
$$\frac{14\,f\,m\,(a+b x)\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)},1,3+m\right]}{b e-a f}+$$
$$\frac{2\,f\,m^2\,(a+b x)\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)},1,3+m\right]}{b e-a f}+$$
$$\frac{8\,f^2\,(a+b x)^2\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)},1,3+m\right]}{(b e-a f)^2}+$$
$$\frac{2\,f^2\,m\,(a+b x)^2\,\text{HurwitzLerchPhi}\left[\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)},1,3+m\right]}{(b e-a f)^2}+$$
$$\left(5\,(d e-c f)\,(a+b x)\,\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]\right)\Big/$$
$$\left((b e-a f)\,(c+d x)\right)+\left(2\,(d e-c f)\,m\,(a+b x)\right.$$
$$\left.\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]\right)\Big/\left((b e-a f)\,(c+d x)\right)+$$
$$\left(8\,f\,(d e-c f)\,(a+b x)^2\,\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]\right)\Big/$$
$$\left((b e-a f)^2\,(c+d x)\right)+\left(2\,f\,(d e-c f)\,m\,(a+b x)^2\right.$$
$$\left.\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]\right)\Big/\left((b e-a f)^2\,(c+d x)\right)+$$
$$\left(3\,f^2\,(d e-c f)\,(a+b x)^3\,\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]\right)\Big/$$
$$\left((b e-a f)^3\,(c+d x)\right)+\left((d e-c f)\,(a+b x)\,\text{HypergeometricPFQ}\left[\{2,2,4+m\},\right.\right.$$
$$\left.\left.\{1,5+m\},\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]\right)\Big/\left((b e-a f)\,(c+d x)\right)+\left(2\,f\,(d e-c f)\right.$$
$$\left.(a+b x)^2\,\text{HypergeometricPFQ}\left[\{2,2,4+m\},\{1,5+m\},\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]\right)\Big/$$

$$\left(\left(b e-a f\right)^2 \left(c+d x\right)\right)+\left(f^2 \left(d e-c f\right) \left(a+b x\right)^3 \text{HypergeometricPFQ}\left[\{2,2,4+m\},\{1,5+m\},\frac{\left(d e-c f\right) \left(a+b x\right)}{\left(b e-a f\right) \left(c+d x\right)}\right]\right)\Big/\left(\left(b e-a f\right)^3 \left(c+d x\right)\right)\Bigg)+$$

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

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

$$\Bigg(24\, \text{HurwitzLerchPhi}\left[\frac{\left(d e-c f\right) \left(a+b x\right)}{\left(b e-a f\right) \left(c+d x\right)},1,3+m\right]+$$

$$26\, m\, \text{HurwitzLerchPhi}\left[\frac{\left(d e-c f\right) \left(a+b x\right)}{\left(b e-a f\right) \left(c+d x\right)},1,3+m\right]+$$

$$9\, m^2\, \text{HurwitzLerchPhi}\left[\frac{\left(d e-c f\right) \left(a+b x\right)}{\left(b e-a f\right) \left(c+d x\right)},1,3+m\right]+$$

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

$$\frac{24 f \left(a+b x\right) \text{HurwitzLerchPhi}\left[\frac{\left(d e-c f\right) \left(a+b x\right)}{\left(b e-a f\right) \left(c+d x\right)},1,3+m\right]}{b e-a f}+$$

$$\frac{14 f m \left(a+b x\right) \text{HurwitzLerchPhi}\left[\frac{\left(d e-c f\right) \left(a+b x\right)}{\left(b e-a f\right) \left(c+d x\right)},1,3+m\right]}{b e-a f}+$$

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

$$\frac{8 f^2 \left(a+b x\right)^2 \text{HurwitzLerchPhi}\left[\frac{\left(d e-c f\right) \left(a+b x\right)}{\left(b e-a f\right) \left(c+d x\right)},1,3+m\right]}{\left(b e-a f\right)^2}+$$

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

$$\left(5 \left(d e-c f\right) \left(a+b x\right) \text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{\left(d e-c f\right) \left(a+b x\right)}{\left(b e-a f\right) \left(c+d x\right)}\right]\right)\Big/$$

$$\left(\left(b e-a f\right) \left(c+d x\right)\right)+\Bigg(2 \left(d e-c f\right) m \left(a+b x\right)$$

$$\text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{\left(d e-c f\right) \left(a+b x\right)}{\left(b e-a f\right) \left(c+d x\right)}\right]\Bigg)\Big/\left(\left(b e-a f\right) \left(c+d x\right)\right)+$$

$$\left(8 f \left(d e-c f\right) \left(a+b x\right)^2 \text{Hypergeometric2F1}\left[2,4+m,5+m,\frac{\left(d e-c f\right) \left(a+b x\right)}{\left(b e-a f\right) \left(c+d x\right)}\right]\right)\Big/$$

$$\left(\left(b e-a f\right)^2 \left(c+d x\right)\right)+\Bigg(2 f \left(d e-c f\right) m \left(a+b x\right)^2$$

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

Problem 3082: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 384 leaves, 5 steps):

$$-\frac{d\,\left(a d f\,(3+m)-b\,\left(d e+c f\,(2+m)\right)\right)\,(a+b x)^{1+m}\,(c+d x)^{-2-m}}{(b c-a d)\,(b e-a f)\,(d e-c f)^2\,(2+m)}-$$
$$\Big(d\,\left(a^2 d^2 f^2\,\left(6+5 m+m^2\right)-b^2\,\left(d^2 e^2-c d e f\,(5+2 m)-c^2 f^2\,\left(2+3 m+m^2\right)\right)-\right.$$
$$\left.a b d f\,\left(d e\,(3+2 m)+c f\,\left(9+8 m+2 m^2\right)\right)\right)\,(a+b x)^{1+m}\,(c+d x)^{-1-m}\Big)\Big/$$
$$\left(\left(b c-a d\right)^2\,(b e-a f)\,(d e-c f)^3\,(1+m)\,(2+m)\right)-\frac{f\,(a+b x)^{1+m}\,(c+d x)^{-2-m}}{(b e-a f)\,(d e-c f)\,(e+f x)}+$$
$$\Bigg(f^2\,\left(a d f\,(3+m)-b\,(3 d e+c f m)\right)\,(a+b x)^m\,(c+d x)^{-m}$$
$$\text{Hypergeometric2F1}\Big[1,\,-m,\,1-m,\,\frac{(b e-a f)\,(c+d x)}{(d e-c f)\,(a+b x)}\Big]\Bigg)\Bigg/\left(\left(b e-a f\right)\,(d e-c f)^4\,m\right)$$

Result (type 5, 38673 leaves): Display of huge result suppressed!

Problem 3083: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^m\,(c+d x)^{-4-m}\,(e+f x)^p\,dx$$

Optimal (type 6, 133 leaves, 3 steps):

$$\left(b^3 (a+b x)^{1+m} (c+d x)^{-m} \left(\frac{b (c+d x)}{b c-a d}\right)^m (e+f x)^p \left(\frac{b (e+f x)}{b e-a f}\right)^{-p} \text{AppellF1}\left[1+m, 4+m, -p, 2+m, -\frac{d (a+b x)}{b c-a d}, -\frac{f (a+b x)}{b e-a f}\right]\right) \Big/ \left((b c-a d)^4 (1+m)\right)$$

Result (type 6, 300 leaves):

$$\left((b c-a d) (b e-a f) (2+m) (a+b x)^{1+m} (c+d x)^{-4-m} (e+f x)^p \text{AppellF1}\left[1+m, 4+m, -p, 2+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]\right) \Big/ \left(b (1+m) \left((b c-a d) (b e-a f) (2+m) \text{AppellF1}\left[1+m, 4+m, -p, 2+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right] - (a+b x) \left((-b c+a d) f p \text{AppellF1}\left[2+m, 4+m, 1-p, 3+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right] + d (b e-a f) (4+m) \text{AppellF1}\left[2+m, 5+m, -p, 3+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3085: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 406 leaves, 10 steps):

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

Result (type 6, 1833 leaves):

$$\frac{1}{c (b c-a d)^3 (1+m) (2+m) (3+m)} 3 e f^2 (a+b x)^m \left(\frac{c (a+b x)}{a (c+d x)}\right)^{-m} (c+d x)^{-3-m} \left(b^3 c^3 (2+3 m+m^2) x^3 \left(\frac{c (a+b x)}{a (c+d x)}\right)^m - a b^2 c^2 (1+m) x^2 \left(\frac{c (a+b x)}{a (c+d x)}\right)^m (-c m+2 d (3+m) x) + a^2 b c x \left(\frac{c (a+b x)}{a (c+d x)}\right)^m \left(-2 c^2 m-2 c d m (3+m) x+d^2 (6+5 m+m^2) x^2\right) +\right.$$

$$a^3 \left(-2 d^3 x^3 + 2 c^3 \left(-1 + \left(\frac{c (a + b x)}{a (c + d x)}\right)^m\right) + 2 c^2 d x \left(-3 + 3 \left(\frac{c (a + b x)}{a (c + d x)}\right)^m + m \left(\frac{c (a + b x)}{a (c + d x)}\right)^m\right) + c d^2 x^2 \left(-6 + 6 \left(\frac{c (a + b x)}{a (c + d x)}\right)^m + 5 m \left(\frac{c (a + b x)}{a (c + d x)}\right)^m + m^2 \left(\frac{c (a + b x)}{a (c + d x)}\right)^m\right)\right)\Bigg) -$$

$$\left(5 a c f^3 x^4 (a + b x)^m (c + d x)^{-4-m} \text{AppellF1}\left[4, -m, 4 + m, 5, -\frac{b x}{a}, -\frac{d x}{c}\right]\right) \Bigg/$$

$$\left(4 \left(-5 a c \text{AppellF1}\left[4, -m, 4 + m, 5, -\frac{b x}{a}, -\frac{d x}{c}\right] - b c m x \text{AppellF1}\left[5, 1 - m, 4 + m, 6, -\frac{b x}{a}, -\frac{d x}{c}\right] + a d (4 + m) x \text{AppellF1}\left[5, -m, 5 + m, 6, -\frac{b x}{a}, -\frac{d x}{c}\right]\right)\right) + \Bigg(3 e^2 f x^2 (a + b x)^m (c + d x)^{-4-m}$$

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

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

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

$$c d^2 x^2 \left(6 + m^2 - 6 \left(\frac{a (c + d x)}{c (a + b x)}\right)^m + m \left(5 + 4 \left(\frac{a (c + d x)}{c (a + b x)}\right)^m\right)\right)\Bigg)\Bigg)\Bigg) \text{Gamma}[1 - m] +$$

$$m (3 c + d x) \Bigg(b^3 c^3 (2 + 3 m + m^2) x^3 + a b^2 c^2 (1 + m) x^2 (c m - 2 d (3 + m) x) + a^2 b c x \left(-2 c^2 m - 2 c d m (3 + m) x + d^2 (6 + 5 m + m^2) x^2\right) +$$

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

$$\left(-3 - m + 3 \left(\frac{a (c + d x)}{c (a + b x)}\right)^m\right) - c d^2 x^2 \left(-6 - 5 m - m^2 + 6 \left(\frac{a (c + d x)}{c (a + b x)}\right)^m\right)\Bigg)\Bigg) \text{Gamma}[-m]\Bigg)\Bigg) \Bigg/$$

$$\Bigg(\Bigg((c + d x) \Bigg(b^3 c^3 m (2 + 3 m + m^2) x^3 - 3 a b^2 c^2 m (1 + m) x^2 (c + d (3 + m) x) + 3 a^2 b c m x \left(2 c^2 + 2 c d (3 + m) x + d^2 (6 + 5 m + m^2) x^2\right) +$$

$$a^3 \Bigg(6 c^3 \left(-1 + \left(\frac{a (c + d x)}{c (a + b x)}\right)^m\right) + 6 c^2 d x \left(-3 - m + 3 \left(\frac{a (c + d x)}{c (a + b x)}\right)^m\right) +$$

$$3 c d^2 x^2 \left(-6 - 5 m - m^2 + 6 \left(\frac{a (c + d x)}{c (a + b x)}\right)^m\right) + d^3 x^3 \left(-6 - 11 m - 6 m^2 - m^3 + 6 \left(\frac{a (c + d x)}{c (a + b x)}\right)^m\right)\Bigg)\Bigg)$$

$$\text{Gamma}[1 - m] + m \Bigg(b^3 c^3 (2 + 3 m + m^2) x^3 (3 c (2 + m) + d m x) -$$

$$3 a b^2 c^2 (1 + m) x^2 \left(c^2 m + c d (12 + 14 m + 3 m^2) x + d^2 m (3 + m) x^2\right) +$$

$$3 a^2 b c x \left(2 c^3 m + 2 c^2 d m (4 + m) x + c d^2 (12 + 34 m + 19 m^2 + 3 m^3) x^2 + d^3 m (6 + 5 m + m^2) x^3\right) +$$

$$a^3 \left(6 c^4 \left(-1+\left(\frac{a (c+d x)}{c (a+b x)}\right)^m\right)+6 c^3 d x \left(-4-m+4 \left(\frac{a (c+d x)}{c (a+b x)}\right)^m\right)+ d^4 x^4 \left(-6-11 m-6 m^2-m^3+6 \left(\frac{a (c+d x)}{c (a+b x)}\right)^m\right)+3 c d^3 x^3 \left(-12-16 m-7 m^2-m^3+ 8 \left(\frac{a (c+d x)}{c (a+b x)}\right)^m\right)+3 c^2 d^2 x^2 \left(-7 m-m^2+12 \left(-1+\left(\frac{a (c+d x)}{c (a+b x)}\right)^m\right)\right)\right)\right) \text{Gamma}[-m]\Bigg)-$$

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

Problem 3089: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 330 leaves, 5 steps):

$$\frac{d (a+b x)^{1+m} (c+d x)^{-3-m}}{(b c-a d) (d e-c f) (3+m)}+\frac{d (a d f (3+m)+b (2 d e-c f (5+m))) (a+b x)^{1+m} (c+d x)^{-2-m}}{(b c-a d)^2 (d e-c f)^2 (2+m) (3+m)}+$$
$$\left(d \left(a^2 d^2 f^2 \left(6+5 m+m^2\right)+a b d f (3+m) (d e-c f (5+2 m))+ b^2 \left(2 d^2 e^2-c d e f (7+m)+c^2 f^2 \left(11+6 m+m^2\right)\right)\right) (a+b x)^{1+m} (c+d x)^{-1-m}\right) \Big/$$
$$\left((b c-a d)^3 (d e-c f)^3 (1+m) (2+m) (3+m)\right)+\frac{1}{(d e-c f)^4 m} f^3 (a+b x)^m (c+d x)^{-m} \text{Hypergeometric2F1}\left[1, -m, 1-m, \frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right]$$

Result (type 5, 26 263 leaves): Display of huge result suppressed!

Problem 3090: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 634 leaves, 6 steps):

$$-\frac{d\,(a\,d\,f\,(4+m)-b\,(d\,e+c\,f\,(3+m)))\,(a+b\,x)^{1+m}\,(c+d\,x)^{-3-m}}{(b\,c-a\,d)\,(b\,e-a\,f)\,(d\,e-c\,f)^2\,(3+m)}-$$
$$\left(d\left(a^2\,d^2\,f^2\,(12+7\,m+m^2)-b^2\,(2\,d^2\,e^2-2\,c\,d\,e\,f\,(4+m)-c^2\,f^2\,(6+5\,m+m^2))-\right.\right.$$
$$\left.\left.2\,a\,b\,d\,f\,(d\,e\,(2+m)+c\,f\,(10+6\,m+m^2))\right)(a+b\,x)^{1+m}\,(c+d\,x)^{-2-m}\right)\Big/$$
$$\left((b\,c-a\,d)^2\,(b\,e-a\,f)\,(d\,e-c\,f)^3\,(2+m)\,(3+m)\right)-$$
$$\frac{1}{(b\,c-a\,d)^3\,(b\,e-a\,f)\,(d\,e-c\,f)^4\,(1+m)\,(2+m)\,(3+m)}$$
$$d\left(a^3\,d^3\,f^3\,(24+26\,m+9\,m^2+m^3)-a^2\,b\,d^2\,f^2\,(3+m)\,(d\,e\,(4+3\,m)+c\,f\,(20+15\,m+3\,m^2))-\right.$$
$$b^3\,(2\,d^3\,e^3-2\,c\,d^2\,e^2\,f\,(5+m)+c^2\,d\,e\,f^2\,(26+17\,m+3\,m^2)+c^3\,f^3\,(6+11\,m+6\,m^2+m^3))-$$
$$\left.a\,b^2\,d\,f\,(2\,d^2\,e^2\,(2+m)-2\,c\,d\,e\,f\,(16+15\,m+3\,m^2)-c^2\,f^2\,(44+50\,m+21\,m^2+3\,m^3))\right)$$
$$(a+b\,x)^{1+m}\,(c+d\,x)^{-1-m}-\frac{f\,(a+b\,x)^{1+m}\,(c+d\,x)^{-3-m}}{(b\,e-a\,f)\,(d\,e-c\,f)\,(e+f\,x)}-$$
$$\left(f^3\,(a\,d\,f\,(4+m)-b\,(4\,d\,e+c\,f\,m))\,(a+b\,x)^m\,(c+d\,x)^{-m}\right.$$
$$\left.\text{Hypergeometric2F1}\left[1,-m,1-m,\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\right)\Big/\left((b\,e-a\,f)\,(d\,e-c\,f)^5\,m\right)$$

Result (type 5, 64 249 leaves) : Display of huge result suppressed!

Problem 3091: Result more than twice size of optimal antiderivative.

$$\int(a+b\,x)^m\,(c+d\,x)^{-5-m}\,(e+f\,x)^p\,dx$$

Optimal (type 6, 133 leaves, 3 steps) :

$$\left(b^4\,(a+b\,x)^{1+m}\,(c+d\,x)^{-m}\left(\frac{b\,(c+d\,x)}{b\,c-a\,d}\right)^m(e+f\,x)^p\left(\frac{b\,(e+f\,x)}{b\,e-a\,f}\right)^{-p}\right.$$
$$\left.\text{AppellF1}\left[1+m,5+m,-p,2+m,-\frac{d\,(a+b\,x)}{b\,c-a\,d},-\frac{f\,(a+b\,x)}{b\,e-a\,f}\right]\right)\Big/\left((b\,c-a\,d)^5\,(1+m)\right)$$

Result (type 6, 300 leaves) :

$$\left((b\,c-a\,d)\,(b\,e-a\,f)\,(2+m)\,(a+b\,x)^{1+m}\,(c+d\,x)^{-5-m}\right.$$
$$\left.(e+f\,x)^p\,\text{AppellF1}\left[1+m,5+m,-p,2+m,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]\right)\Big/$$
$$\left(b\,(1+m)\left((b\,c-a\,d)\,(b\,e-a\,f)\,(2+m)\,\text{AppellF1}\left[1+m,5+m,-p,2+m,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]-\right.\right.$$
$$(a+b\,x)\left((-b\,c+a\,d)\,f\,p\,\text{AppellF1}\left[2+m,5+m,1-p,3+m,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]+\right.$$
$$\left.\left.\left.d\,(b\,e-a\,f)\,(5+m)\,\text{AppellF1}\left[2+m,6+m,-p,3+m,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]\right)\right)\right)$$

Problem 3093: Attempted integration timed out after 120 seconds.

$$\int (a+b x)^m (c+d x)^{-5-m} (e+f x)^4 \, dx$$

Optimal (type 5, 650 leaves, 14 steps):

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

Result (type 1, 1 leaves):

???

Problem 3098: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 557 leaves, 6 steps):

$$\frac{d (a+b x)^{1+m} (c+d x)^{-4-m}}{(b c-a d) (d e-c f) (4+m)}+\frac{d (a d f (4+m)+b (3 d e-c f (7+m))) (a+b x)^{1+m} (c+d x)^{-3-m}}{(b c-a d)^2 (d e-c f)^2 (3+m) (4+m)}+\left(d \left(a^2 d^2 f^2 \left(12+7 m+m^2\right)+2 a b d f (4+m) (d e-c f (4+m))+b^2 \left(6 d^2 e^2-2 c d e f (10+m)+c^2 f^2 \left(26+9 m+m^2\right)\right)\right) (a+b x)^{1+m} (c+d x)^{-2-m}\right) \Big/ \left((b c-a d)^3 (d e-c f)^3 (2+m) (3+m) (4+m)\right)+\left(d \left(a^3 d^3 f^3 \left(24+26 m+9 m^2+m^3\right)+a^2 b d^2 f^2 \left(12+7 m+m^2\right) (d e-c f (7+3 m))+a b^2 d f (4+m) \left(2 d^2 e^2-2 c d e f (5+m)+c^2 f^2 \left(26+17 m+3 m^2\right)\right)+b^3 \left(6 d^3 e^3-2 c d^2 e^2 f (13+m)+c^2 d e f^2 \left(46+11 m+m^2\right)-c^3 f^3 \left(50+35 m+10 m^2+m^3\right)\right)\right) (a+b x)^{1+m} (c+d x)^{-1-m}\right) \Big/ \left((b c-a d)^4 (d e-c f)^4 (1+m) (2+m) (3+m) (4+m)\right)-\frac{1}{(d e-c f)^5 m} f^4 (a+b x)^m (c+d x)^{-m} \text{Hypergeometric2F1}\left[1,-m,1-m,\frac{(b e-a f) (c+d x)}{(d e-c f) (a+b x)}\right]$$

Result (type 5, 50 481 leaves) : Display of huge result suppressed!

Problem 3099: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^m (c+d x)^{1-m} (e+f x)^p \, dx$$

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

$$\frac{1}{b^2 (1+m)} (b c-a d) (a+b x)^{1+m} (c+d x)^{-m} \left(\frac{b (c+d x)}{b c-a d}\right)^m (e+f x)^p \left(\frac{b (e+f x)}{b e-a f}\right)^{-p} \text{AppellF1}\left[1+m,-1+m,-p,2+m,-\frac{d (a+b x)}{b c-a d},-\frac{f (a+b x)}{b e-a f}\right]$$

Result (type 6, 298 leaves) :

$$\left((b c-a d) (b e-a f) (2+m) (a+b x)^{1+m} (c+d x)^{1-m} (e+f x)^p \text{AppellF1}\left[1+m,-1+m,-p,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right) \Big/ \left(b (1+m) \left((b c-a d) (b e-a f) (2+m) \text{AppellF1}\left[1+m,-1+m,-p,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right] - (a+b x) \left((-b c+a d) f p \text{AppellF1}\left[2+m,-1+m,1-p,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right] + d (b e-a f) (-1+m) \text{AppellF1}\left[2+m,m,-p,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3100: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 445 leaves, 4 steps) :

$$\frac{f (a+b x)^{1+m} (c+d x)^{2-m} (e+f x)^2}{5 b d} + \frac{1}{60 b^3 d^3} f (a+b x)^{1+m} (c+d x)^{2-m} \left(a^2 d^2 f^2 \left(12-7 m+m^2\right) - a b d f \left(15 d e (3-m) - c f \left(9+2 m-2 m^2\right)\right) + b^2 \left(48 d^2 e^2 - 15 c d e f (2+m) + c^2 f^2 \left(6+5 m+m^2\right)\right) - 3 b d f \left(a d f (4-m) - b (7 d e - c f (3+m))\right) x\right) - \frac{1}{60 b^5 d^3 (1+m)} (b c-a d) \left(a^3 d^3 f^3 \left(24-26 m+9 m^2-m^3\right) - 3 a^2 b d^2 f^2 \left(6-5 m+m^2\right) (5 d e-c f (1+m)) + 3 a b^2 d f (2-m) \left(20 d^2 e^2 - 10 c d e f (1+m) + c^2 f^2 \left(2+3 m+m^2\right)\right) - b^3 \left(60 d^3 e^3 - 60 c d^2 e^2 f (1+m) + 15 c^2 d e f^2 \left(2+3 m+m^2\right) - c^3 f^3 \left(6+11 m+6 m^2+m^3\right)\right)\right) (a+b x)^{1+m} (c+d x)^{-m} \left(\frac{b (c+d x)}{b c-a d}\right)^m \text{Hypergeometric2F1}\left[-1+m,1+m,2+m,-\frac{d (a+b x)}{b c-a d}\right]$$

Result (type 6, 461 leaves) :

$$\frac{1}{4} (a+b x)^m (c+d x)^{1-m} \left(\left(18 a c e^2 f x^2 \text{AppellF1}\left[2, -m, -1+m, 3, -\frac{b x}{a}, -\frac{d x}{c}\right]\right) \Big/ \left(3 a c \text{AppellF1}\left[2, -m, -1+m, 3, -\frac{b x}{a}, -\frac{d x}{c}\right] + b c m x \text{AppellF1}\left[3, 1-m, -1+m, 4, -\frac{b x}{a}, -\frac{d x}{c}\right] - a d (-1+m) x \text{AppellF1}\left[3, -m, m, 4, -\frac{b x}{a}, -\frac{d x}{c}\right]\right) + \left(16 a c e f^2 x^3 \text{AppellF1}\left[3, -m, -1+m, 4, -\frac{b x}{a}, -\frac{d x}{c}\right]\right) \Big/ \left(4 a c \text{AppellF1}\left[3, -m, -1+m, 4, -\frac{b x}{a}, -\frac{d x}{c}\right] + b c m x \text{AppellF1}\left[4, 1-m, -1+m, 5, -\frac{b x}{a}, -\frac{d x}{c}\right] - a d (-1+m) x \text{AppellF1}\left[4, -m, m, 5, -\frac{b x}{a}, -\frac{d x}{c}\right]\right) + \left(5 a c f^3 x^4 \text{AppellF1}\left[4, -m, -1+m, 5, -\frac{b x}{a}, -\frac{d x}{c}\right]\right) \Big/ \left(5 a c \text{AppellF1}\left[4, -m, -1+m, 5, -\frac{b x}{a}, -\frac{d x}{c}\right] + b c m x \text{AppellF1}\left[5, 1-m, -1+m, 6, -\frac{b x}{a}, -\frac{d x}{c}\right] - a d (-1+m) x \text{AppellF1}\left[5, -m, m, 6, -\frac{b x}{a}, -\frac{d x}{c}\right]\right) - \frac{1}{d (-2+m)} 4 e^3 \left(\frac{d (a+b x)}{-b c+a d}\right)^{-m} (c+d x) \text{Hypergeometric2F1}\left[2-m, -m, 3-m, \frac{b (c+d x)}{b c-a d}\right]\right)$$

Problem 3101: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 260 leaves, 4 steps):

$$-\frac{f (a d f (3-m) - b (5 d e - c f (2+m))) (a+b x)^{1+m} (c+d x)^{2-m}}{12 b^2 d^2} + \frac{f (a+b x)^{1+m} (c+d x)^{2-m} (e+f x)}{4 b d} + \frac{1}{12 b^4 d^2 (1+m)} (b c - a d) \left(a^2 d^2 f^2 (6 - 5 m + m^2) - 2 a b d f (2-m) (4 d e - c f (1+m)) + b^2 (12 d^2 e^2 - 8 c d e f (1+m) + c^2 f^2 (2 + 3 m + m^2))\right) (a+b x)^{1+m} (c+d x)^{-m} \left(\frac{b (c+d x)}{b c - a d}\right)^m \text{Hypergeometric2F1}\left[-1+m, 1+m, 2+m, -\frac{d (a+b x)}{b c - a d}\right]$$

Result (type 6, 510 leaves):

$$c\,(a+b x)^m (c+d x)^{-m} \left(\left(3 a e (d e+2 c f) x^2\,\text{AppellF1}\left[2,-m,m,3,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\Big/\left(6 a c\,\text{AppellF1}\left[2,-m,m,3,-\frac{b x}{a},-\frac{d x}{c}\right]+2 m x\left(b c\,\text{AppellF1}\left[3,1-m,m,4,-\frac{b x}{a},-\frac{d x}{c}\right]-a d\,\text{AppellF1}\left[3,-m,1+m,4,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\right)+\left(4 a f (2 d e+c f) x^3\,\text{AppellF1}\left[3,-m,m,4,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\Big/\left(3\left(4 a c\,\text{AppellF1}\left[3,-m,m,4,-\frac{b x}{a},-\frac{d x}{c}\right]+b c m x\,\text{AppellF1}\left[4,1-m,m,5,-\frac{b x}{a},-\frac{d x}{c}\right]-a d m x\,\text{AppellF1}\left[4,-m,1+m,5,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\right)+\left(5 a d f^2 x^4\,\text{AppellF1}\left[4,-m,m,5,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\Big/\left(20 a c\,\text{AppellF1}\left[4,-m,m,5,-\frac{b x}{a},-\frac{d x}{c}\right]+4 b c m x\,\text{AppellF1}\left[5,1-m,m,6,-\frac{b x}{a},-\frac{d x}{c}\right]-4 a d m x\,\text{AppellF1}\left[5,-m,1+m,6,-\frac{b x}{a},-\frac{d x}{c}\right]\right)-\frac{c e^2\left(\frac{d (a+b x)}{-b c+a d}\right)^{-m}\text{Hypergeometric2F1}\left[1-m,-m,2-m,\frac{b (c+d x)}{b c-a d}\right]}{d(-1+m)}-\frac{e^2 x\left(\frac{d (a+b x)}{-b c+a d}\right)^{-m}\text{Hypergeometric2F1}\left[1-m,-m,2-m,\frac{b (c+d x)}{b c-a d}\right]}{-1+m}\right)$$

Problem 3102: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a+b x)^m (c+d x)^{1-m} (e+f x)\, dx$$

Optimal (type 5, 145 leaves, 3 steps):

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

Result (type 6, 322 leaves):

$$c\,(a+b\,x)^m\,(c+d\,x)^{-m}\left(\left(3\,a\,(d\,e+c\,f)\,x^2\,\text{AppellF1}\left[2,-m,m,3,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]\right)\Big/\left(6\,a\,c\,\text{AppellF1}\left[2,-m,m,3,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]+2\,m\,x\left(b\,c\,\text{AppellF1}\left[3,1-m,m,4,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]-a\,d\,\text{AppellF1}\left[3,-m,1+m,4,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]\right)\right)+\left(4\,a\,d\,f\,x^3\,\text{AppellF1}\left[3,-m,m,4,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]\right)\Big/\left(12\,a\,c\,\text{AppellF1}\left[3,-m,m,4,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]+3\,b\,c\,m\,x\,\text{AppellF1}\left[4,1-m,m,5,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]-3\,a\,d\,m\,x\,\text{AppellF1}\left[4,-m,1+m,5,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]\right)-\frac{1}{d\,(-1+m)}e\left(\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right)^{-m}(c+d\,x)\,\text{Hypergeometric2F1}\left[1-m,-m,2-m,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)$$

Problem 3103: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 82 leaves, 2 steps):

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

Result (type 6, 202 leaves):

$$\frac{1}{d}c\,(a+b\,x)^m\,(c+d\,x)^{-m}\left(\left(3\,a\,d^2\,x^2\,\text{AppellF1}\left[2,-m,m,3,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]\right)\Big/\left(6\,a\,c\,\text{AppellF1}\left[2,-m,m,3,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]+2\,m\,x\left(b\,c\,\text{AppellF1}\left[3,1-m,m,4,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]-a\,d\,\text{AppellF1}\left[3,-m,1+m,4,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]\right)\right)-\frac{\left(\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right)^{-m}(c+d\,x)\,\text{Hypergeometric2F1}\left[1-m,-m,2-m,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{-1+m}\right)$$

Problem 3104: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 230 leaves, 6 steps):

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

Result (type 6, 622 leaves):

$$\Bigg((a+b\,x)^m\,(c+d\,x)^{-m}\Bigg(-d\,(-b\,c+a\,d)\,e\,(b\,e-a\,f)\,(-1+m)\,(2+m)\,(a+b\,x)\,\text{AppellF1}\left[1+m,m,1,2+m,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]-c\,(b\,c-a\,d)\,f\,(b\,e-a\,f)\,(-1+m)\,(2+m)\,(a+b\,x)\,\text{AppellF1}\left[1+m,m,1,2+m,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]+b\,(1+m)\left(\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right)^{-m}(c+d\,x)\,(e+f\,x)\Bigg((b\,c-a\,d)\,(b\,e-a\,f)\,(2+m)\,\text{AppellF1}\left[1+m,m,1,2+m,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]+(a+b\,x)\Bigg((-b\,c\,f+a\,d\,f)\,\text{AppellF1}\left[2+m,m,2,3+m,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]+d\,(-b\,e+a\,f)\,m\,\text{AppellF1}\left[2+m,1+m,1,3+m,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]\Bigg)\Bigg)\text{Hypergeometric2F1}\left[1-m,-m,2-m,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)\Bigg)\Bigg/\Bigg(b\,f\,(1-m)\,(1+m)\,(e+f\,x)\Bigg((b\,c-a\,d)\,(b\,e-a\,f)\,(2+m)\,\text{AppellF1}\left[1+m,m,1,2+m,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]+(a+b\,x)\Bigg((-b\,c\,f+a\,d\,f)\,\text{AppellF1}\left[2+m,m,2,3+m,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]+d\,(-b\,e+a\,f)\,m\,\text{AppellF1}\left[2+m,1+m,1,3+m,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]\Bigg)\Bigg)\Bigg)$$

Problem 3105: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 190 leaves, 6 steps):

$$-\frac{(a+bx)^m (c+dx)^{1-m}}{f (e+fx)}+\frac{1}{f^2 (be-af) m}(adf(1-m)-b(de-cfm))$$
$$(a+bx)^m (c+dx)^{-m}\,\text{Hypergeometric2F1}\left[1,m,1+m,\frac{(de-cf)(a+bx)}{(be-af)(c+dx)}\right]+\frac{1}{f^2 m}$$
$$d\,(a+bx)^m (c+dx)^{-m}\left(\frac{b(c+dx)}{bc-ad}\right)^m \text{Hypergeometric2F1}\left[m,m,1+m,-\frac{d(a+bx)}{bc-ad}\right]$$

Result (type 6, 461 leaves):

$$\frac{1}{(be-af)(1+m)(e+fx)}(a+bx)^{1+m}(c+dx)^{-m}$$
$$\left(-\left(\left(d(bc-ad)(be-af)^3(2+m)\,\text{AppellF1}\left[1+m,m,1,2+m,\frac{d(a+bx)}{-bc+ad},\frac{f(a+bx)}{-be+af}\right]\right)\Big/\right.\right.$$
$$\left(bf(-be+af)\right.$$
$$\left((bc-ad)(be-af)(2+m)\,\text{AppellF1}\left[1+m,m,1,2+m,\frac{d(a+bx)}{-bc+ad},\frac{f(a+bx)}{-be+af}\right]+\right.$$
$$(a+bx)\left((-bcf+adf)\,\text{AppellF1}\left[2+m,m,2,3+m,\frac{d(a+bx)}{-bc+ad},\frac{f(a+bx)}{-be+af}\right]+\right.$$
$$\left.\left.\left.\left.d(-be+af)\,m\,\text{AppellF1}\left[2+m,1+m,1,3+m,\frac{d(a+bx)}{-bc+ad},\frac{f(a+bx)}{-be+af}\right]\right)\right)\right)\right)+$$
$$c\left(\frac{(be-af)(c+dx)}{(bc-ad)(e+fx)}\right)^m \text{Hypergeometric2F1}\left[m,1+m,2+m,\frac{(-de+cf)(a+bx)}{(bc-ad)(e+fx)}\right]-$$
$$\frac{1}{f}$$
$$de\left(\frac{(be-af)(c+dx)}{(bc-ad)(e+fx)}\right)^m$$
$$\left.\text{Hypergeometric2F1}\left[m,1+m,2+m,\frac{(-de+cf)(a+bx)}{(bc-ad)(e+fx)}\right]\right)$$

Problem 3106: Result more than twice size of optimal antiderivative.

$$\int\frac{(a+bx)^m (c+dx)^{1-m}}{(e+fx)^3}\,dx$$

Optimal (type 5, 85 leaves, 1 step):

$$\left((bc-ad)^2 (a+bx)^{1+m} (c+dx)^{-1-m}\,\text{Hypergeometric2F1}\left[3,1+m,2+m,\frac{(de-cf)(a+bx)}{(be-af)(c+dx)}\right]\right)\Big/$$
$$\left((be-af)^3 (1+m)\right)$$

Result (type 5, 933 leaves):

$$\Big((a+b\,x)^{1+m}\,(c+d\,x)^{-m}\Big(-d\,e\,(b\,e-a\,f)^2\,(1+m)\,(c+d\,x)$$

$$\Big((-2\,b\,e+a\,f\,(1+m)+b\,f\,(-1+m)\,x)\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,m\Big]-$$

$$2\,(a\,f\,(1+m)+b\,(-e+f\,m\,x))\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,1+m\Big]+$$

$$f\,(1+m)\,(a+b\,x)\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,2+m\Big]\Big)+c\,f\,(b\,e-a\,f)^2\,(1+m)$$

$$(c+d\,x)\,\Big((-2\,b\,e+a\,f\,(1+m)+b\,f\,(-1+m)\,x)\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,m\Big]-$$

$$2\,(a\,f\,(1+m)+b\,(-e+f\,m\,x))\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,1+m\Big]+$$

$$f\,(1+m)\,(a+b\,x)\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,2+m\Big]\Big)+$$

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

$$(a\,f\,(1+m)+b\,(-e+f\,m\,x))\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,m\Big]-(a+b\,x)$$

$$\Big((a\,f\,(1+m)\,(-2\,c\,f+d\,(e-f\,x))+b\,(c\,f\,(e\,(2+m)-f\,m\,x)+d\,e\,(-e+f\,(1+2\,m)\,x)))$$

$$\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,1+m\Big]+$$

$$f\,(-d\,e+c\,f)\,(1+m)\,(a+b\,x)\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,2+m\Big]\Big)\Big)$$

$$\text{Hypergeometric2F1}\Big[m,1+m,2+m,\frac{(-d\,e+c\,f)\,(a+b\,x)}{(b\,c-a\,d)\,(e+f\,x)}\Big]\Big)\Big)\Big/$$

$$\Big(f\,(2\,b\,e-2\,a\,f)\,(b\,e-a\,f)\,(1+m)$$

$$(e+f\,x)^2$$

$$\Big((b\,e-a\,f)\,(c+d\,x)\,(a\,f\,(1+m)+b\,(-e+f\,m\,x))$$

$$\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,m\Big]-$$

$$(a+b\,x)\,\Big((a\,f\,(1+m)\,(-2\,c\,f+d\,(e-f\,x))+b\,(c\,f\,(e\,(2+m)-f\,m\,x)+d\,e\,(-e+f\,(1+2\,m)\,x)))$$

$$\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,1+m\Big]+$$

$$f\,(-d\,e+c\,f)\,(1+m)\,(a+b\,x)\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,2+m\Big]\Big)\Big)\Big)$$

Problem 3107: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 176 leaves, 2 steps):

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

Result (type 5, 3837 leaves):

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

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

$$\left(c (a+b x)^{1+m} (c+d x)^{1-m} \left(6 (b e-a f)^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, m\right]+6 (b e-a f)^2 m \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, m\right]+6 f (b e-a f) (a+b x) \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, m\right]+\right.\right.$$

$$6\,f\,\left(-b\,e+a\,f\right)\,m^2\,\left(a+b\,x\right)\,\text{HurwitzLerchPhi}\left[\frac{\left(d\,e-c\,f\right)\,\left(a+b\,x\right)}{\left(b\,e-a\,f\right)\,\left(c+d\,x\right)},\,1,\,m\right]+$$

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

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

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

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

$$6\,\left(b\,e-a\,f\right)^2\,\text{HurwitzLerchPhi}\left[\frac{\left(d\,e-c\,f\right)\,\left(a+b\,x\right)}{\left(b\,e-a\,f\right)\,\left(c+d\,x\right)},\,1,\,1+m\right]-$$

$$6\,\left(b\,e-a\,f\right)^2\,m\,\text{HurwitzLerchPhi}\left[\frac{\left(d\,e-c\,f\right)\,\left(a+b\,x\right)}{\left(b\,e-a\,f\right)\,\left(c+d\,x\right)},\,1,\,1+m\right]+$$

$$12\,f\,\left(b\,e-a\,f\right)\,m\,\left(a+b\,x\right)\,\text{HurwitzLerchPhi}\left[\frac{\left(d\,e-c\,f\right)\,\left(a+b\,x\right)}{\left(b\,e-a\,f\right)\,\left(c+d\,x\right)},\,1,\,1+m\right]+$$

$$12\,f\,\left(b\,e-a\,f\right)\,m^2\,\left(a+b\,x\right)\,\text{HurwitzLerchPhi}\left[\frac{\left(d\,e-c\,f\right)\,\left(a+b\,x\right)}{\left(b\,e-a\,f\right)\,\left(c+d\,x\right)},\,1,\,1+m\right]+$$

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

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

$$6\,f\,\left(-b\,e+a\,f\right)\,\left(a+b\,x\right)\,\text{HurwitzLerchPhi}\left[\frac{\left(d\,e-c\,f\right)\,\left(a+b\,x\right)}{\left(b\,e-a\,f\right)\,\left(c+d\,x\right)},\,1,\,2+m\right]+$$

$$12\,f\,\left(-b\,e+a\,f\right)\,m\,\left(a+b\,x\right)\,\text{HurwitzLerchPhi}\left[\frac{\left(d\,e-c\,f\right)\,\left(a+b\,x\right)}{\left(b\,e-a\,f\right)\,\left(c+d\,x\right)},\,1,\,2+m\right]+$$

$$6\,f\,\left(-b\,e+a\,f\right)\,m^2\,\left(a+b\,x\right)\,\text{HurwitzLerchPhi}\left[\frac{\left(d\,e-c\,f\right)\,\left(a+b\,x\right)}{\left(b\,e-a\,f\right)\,\left(c+d\,x\right)},\,1,\,2+m\right]+$$

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

$$6\,f^2\,m^2\,\left(a+b\,x\right)^2\,\text{HurwitzLerchPhi}\left[\frac{\left(d\,e-c\,f\right)\,\left(a+b\,x\right)}{\left(b\,e-a\,f\right)\,\left(c+d\,x\right)},\,1,\,2+m\right]+$$

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

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

$$5\,f^2\,m\,\left(a+b\,x\right)^2\,\text{HurwitzLerchPhi}\left[\frac{\left(d\,e-c\,f\right)\,\left(a+b\,x\right)}{\left(b\,e-a\,f\right)\,\left(c+d\,x\right)},\,1,\,3+m\right]-$$

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

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

$$\Bigg(3 (1+m) (e+f x)^3 \Bigg((b e-a f) (c+d x) \left(a^2 f^2 (2+3 m+m^2)+2 a b f (1+m) (-2 e+f m x)+\right.$$

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

$$(a+b x) \Bigg(\Big(a^2 f^2 (2+3 m+m^2) (-3 c f+d (e-2 f x))-2 a b f (1+m)$$

$$\left(c f (-e (6+m)+2 f m x)+d \left(2 e^2-2 e f (2+m) x+f^2 m x^2\right)\right)+$$

$$b^2 \Big(c f \left(-2 e^2 (3+2 m)+2 e f m (3+m) x-f^2 (-1+m) m x^2\right)+d e \Big(2 e^2-4 e f (1+2 m) x+$$

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

$$f (1+m) (a+b x) \Big((a f (2+m) (-2 d e+3 c f+d f x)+b c f (-e (6+m)+2 f m x)+$$

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

$$f (d e-c f) (2+m) (a+b x) \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 3+m\right]\Big)\Bigg)\Bigg)\Bigg) -$$

$$\Bigg(d e (a+b x)^{1+m} (c+d x)^{1-m} \Bigg(6 (b e-a f)^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, m\right] +$$

$$6 (b e-a f)^2 m \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, m\right] +$$

$$6 f (b e-a f) (a+b x) \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, m\right] +$$

$$6 f (-b e+a f) m^2 (a+b x) \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, m\right] +$$

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

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

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

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

$$6 (b e-a f)^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 1+m\right] -$$

$$6 (b e - a f)^2 m \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 1 + m\right] +$$

$$12 f (b e - a f) m (a + b x) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 1 + m\right] +$$

$$12 f (b e - a f) m^2 (a + b x) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 1 + m\right] +$$

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

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

$$6 f (-b e + a f) (a + b x) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 2 + m\right] +$$

$$12 f (-b e + a f) m (a + b x) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 2 + m\right] +$$

$$6 f (-b e + a f) m^2 (a + b x) \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 2 + m\right] +$$

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

$$6 f^2 m^2 (a + b x)^2 \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 2 + m\right] +$$

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

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

$$5 f^2 m (a + b x)^2 \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 3 + m\right] -$$

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

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

$$\Bigg(3 f (1 + m) (e + f x)^3 \Bigg((b e - a f) (c + d x) (a^2 f^2 (2 + 3 m + m^2) + 2 a b f (1 + m) (-2 e + f m x) +$$

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

$$(a + b x) \Bigg((a^2 f^2 (2 + 3 m + m^2) (-3 c f + d (e - 2 f x)) - 2 a b f (1 + m)$$

$$(c f (-e (6 + m) + 2 f m x) + d (2 e^2 - 2 e f (2 + m) x + f^2 m x^2)) +$$

$$b^2 (c f (-2 e^2 (3 + 2 m) + 2 e f m (3 + m) x - f^2 (-1 + m) m x^2) + d e (2 e^2 - 4 e f (1 + 2 m) x +$$

$$f^2\, m\, (1+3\, m)\, x^2\big)\big)\big)\ \text{HurwitzLerchPhi}\Big[\frac{(d\, e-c\, f)\, (a+b\, x)}{(b\, e-a\, f)\, (c+d\, x)},\, 1,\, 1+m\Big]+$$

$$f\, (1+m)\, (a+b\, x)\, \Big(\big(a\, f\, (2+m)\, (-2\, d\, e+3\, c\, f+d\, f\, x)+b\, c\, f\, (-e\, (6+m)+2\, f\, m\, x)+$$

$$b\, d\, e\, (4\, e-f\, (2+3\, m)\, x)\big)\ \text{HurwitzLerchPhi}\Big[\frac{(d\, e-c\, f)\, (a+b\, x)}{(b\, e-a\, f)\, (c+d\, x)},\, 1,\, 2+m\Big]+$$

$$f\, (d\, e-c\, f)\, (2+m)\, (a+b\, x)\ \text{HurwitzLerchPhi}\Big[\frac{(d\, e-c\, f)\, (a+b\, x)}{(b\, e-a\, f)\, (c+d\, x)},\, 1,\, 3+m\Big]\Big)\Big)\Big)\Big)$$

Problem 3108: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b\, x)^m\, (c+d\, x)^{1-m}}{(e+f\, x)^5}\, dx$$

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

$$-\frac{f\, (a+b\, x)^{1+m}\, (c+d\, x)^{2-m}}{4\, (b\, e-a\, f)\, (d\, e-c\, f)\, (e+f\, x)^4}-\frac{f\, \big(b\, (5\, d\, e-c\, f\, (3-m))-a\, d\, f\, (2+m)\big)\, (a+b\, x)^{1+m}\, (c+d\, x)^{2-m}}{12\, (b\, e-a\, f)^2\, (d\, e-c\, f)^2\, (e+f\, x)^3}-$$

$$\Big((b\, c-a\, d)^2\, \big(2\, a\, b\, d\, f\, (4\, d\, e-c\, f\, (2-m))\, (1+m)-a^2\, d^2\, f^2\, (2+3\, m+m^2)-$$

$$b^2\, \big(12\, d^2\, e^2-8\, c\, d\, e\, f\, (2-m)+c^2\, f^2\, (6-5\, m+m^2)\big)\big)\, (a+b\, x)^{1+m}\, (c+d\, x)^{-1-m}$$

$$\text{Hypergeometric2F1}\Big[3,\, 1+m,\, 2+m,\, \frac{(d\, e-c\, f)\, (a+b\, x)}{(b\, e-a\, f)\, (c+d\, x)}\Big]\Big)\Big/\Big(12\, (b\, e-a\, f)^5\, (d\, e-c\, f)^2\, (1+m)\Big)$$

Result (type 5, 63 464 leaves): Display of huge result suppressed!

Problem 3109: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b\, x)^m\, (c+d\, x)^{1-m}}{(e+f\, x)^6}\, dx$$

Optimal (type 5, 542 leaves, 5 steps):

$$-\frac{f\,(a+b\,x)^{1+m}\,(c+d\,x)^{2-m}}{5\,(b\,e-a\,f)\,(d\,e-c\,f)\,(e+f\,x)^5}-\frac{f\,(b\,(7\,d\,e-c\,f\,(4-m))-a\,d\,f\,(3+m))\,(a+b\,x)^{1+m}\,(c+d\,x)^{2-m}}{20\,(b\,e-a\,f)^2\,(d\,e-c\,f)^2\,(e+f\,x)^4}-$$
$$\Big(f\,\big(a^2\,d^2\,f^2\,(6+5\,m+m^2)-a\,b\,d\,f\,(3\,d\,e\,(7+4\,m)-c\,f\,(9+2\,m-2\,m^2))+$$
$$b^2\,(27\,d^2\,e^2-3\,c\,d\,e\,f\,(11-4\,m)+c^2\,f^2\,(12-7\,m+m^2))\big)\,(a+b\,x)^{1+m}\,(c+d\,x)^{2-m}\Big)\Big/$$
$$\Big(60\,(b\,e-a\,f)^3\,(d\,e-c\,f)^3\,(e+f\,x)^3\Big)+\frac{1}{60\,(b\,e-a\,f)^6\,(d\,e-c\,f)^3\,(1+m)}$$
$$\Big((b\,c-a\,d)^2\,\big(3\,a^2\,b\,d^2\,f^2\,(5\,d\,e-c\,f\,(2-m))\,(2+3\,m+m^2)-a^3\,d^3\,f^3\,(6+11\,m+6\,m^2+m^3)-$$
$$3\,a\,b^2\,d\,f\,(1+m)\,(20\,d^2\,e^2-10\,c\,d\,e\,f\,(2-m)+c^2\,f^2\,(6-5\,m+m^2))+$$
$$b^3\,(60\,d^3\,e^3-60\,c\,d^2\,e^2\,f\,(2-m)+15\,c^2\,d\,e\,f^2\,(6-5\,m+m^2)-c^3\,f^3\,(24-26\,m+9\,m^2-m^3))\big)\Big)$$
$$(a+b\,x)^{1+m}\,(c+d\,x)^{-1-m}\,\text{Hypergeometric2F1}\Big[3,\,1+m,\,2+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]$$

Result (type 5, 136 671 leaves) : Display of huge result suppressed!

Problem 3110: Result more than twice size of optimal antiderivative.

$$\int (a+b\,x)^m\,(c+d\,x)^{2-m}\,(e+f\,x)^p\,dx$$

Optimal (type 6, 133 leaves, 3 steps) :

$$\frac{1}{b^3\,(1+m)}(b\,c-a\,d)^2\,(a+b\,x)^{1+m}\,(c+d\,x)^{-m}\left(\frac{b\,(c+d\,x)}{b\,c-a\,d}\right)^m\,(e+f\,x)^p$$
$$\left(\frac{b\,(e+f\,x)}{b\,e-a\,f}\right)^{-p}\,\text{AppellF1}\Big[1+m,\,-2+m,\,-p,\,2+m,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d},\,-\frac{f\,(a+b\,x)}{b\,e-a\,f}\Big]$$

Result (type 6, 300 leaves) :

$$\Big((b\,c-a\,d)\,(b\,e-a\,f)\,(2+m)\,(a+b\,x)^{1+m}\,(c+d\,x)^{2-m}\,(e+f\,x)^p$$
$$\text{AppellF1}\Big[1+m,\,-2+m,\,-p,\,2+m,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\,\frac{f\,(a+b\,x)}{-b\,e+a\,f}\Big]\Big)\Big/\Big(b\,(1+m)$$
$$\Big((b\,c-a\,d)\,(b\,e-a\,f)\,(2+m)\,\text{AppellF1}\Big[1+m,\,-2+m,\,-p,\,2+m,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\,\frac{f\,(a+b\,x)}{-b\,e+a\,f}\Big]-$$
$$(a+b\,x)\,\Big((-b\,c+a\,d)\,f\,p\,\text{AppellF1}\Big[2+m,\,-2+m,\,1-p,\,3+m,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\,\frac{f\,(a+b\,x)}{-b\,e+a\,f}\Big]+$$
$$d\,(b\,e-a\,f)\,(-2+m)\,\text{AppellF1}\Big[2+m,\,-1+m,\,-p,\,3+m,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\,\frac{f\,(a+b\,x)}{-b\,e+a\,f}\Big]\Big)\Big)\Big)$$

Problem 3111: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 447 leaves, 4 steps) :

$$\frac{f\,(a+b\,x)^{1+m}\,(c+d\,x)^{3-m}\,(e+f\,x)^2}{6\,b\,d}+\frac{1}{120\,b^3\,d^3}$$
$$f\,(a+b\,x)^{1+m}\,(c+d\,x)^{3-m}\,\Big(a^2\,d^2\,f^2\,\left(20-9\,m+m^2\right)-2\,a\,b\,d\,f\,\left(9\,d\,e\,(4-m)-c\,f\,\left(6+2\,m-m^2\right)\right)+$$
$$b^2\,\left(70\,d^2\,e^2-18\,c\,d\,e\,f\,(2+m)+c^2\,f^2\,\left(6+5\,m+m^2\right)\right)-$$
$$4\,b\,d\,f\,\left(a\,d\,f\,(5-m)-b\,\left(8\,d\,e-c\,f\,(3+m)\right)\right)\,x\Big)-\frac{1}{120\,b^6\,d^3\,(1+m)}$$
$$(b\,c-a\,d)^2\,\Big(a^3\,d^3\,f^3\,\left(60-47\,m+12\,m^2-m^3\right)-3\,a^2\,b\,d^2\,f^2\,\left(12-7\,m+m^2\right)\,\left(6\,d\,e-c\,f\,(1+m)\right)+$$
$$3\,a\,b^2\,d\,f\,(3-m)\,\left(30\,d^2\,e^2-12\,c\,d\,e\,f\,(1+m)+c^2\,f^2\,\left(2+3\,m+m^2\right)\right)-$$
$$b^3\,\left(120\,d^3\,e^3-90\,c\,d^2\,e^2\,f\,(1+m)+18\,c^2\,d\,e\,f^2\,\left(2+3\,m+m^2\right)-c^3\,f^3\,\left(6+11\,m+6\,m^2+m^3\right)\right)\Big)$$
$$(a+b\,x)^{1+m}\,(c+d\,x)^{-m}\,\left(\frac{b\,(c+d\,x)}{b\,c-a\,d}\right)^m\,\text{Hypergeometric2F1}\left[-2+m,\,1+m,\,2+m,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]$$

Result (type 6, 467 leaves):

$$\frac{1}{4}\,(a+b\,x)^m\,(c+d\,x)^{2-m}\,\Bigg(\left(18\,a\,c\,e^2\,f\,x^2\,\text{AppellF1}\left[2,\,-m,\,-2+m,\,3,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\Big/$$
$$\Big(3\,a\,c\,\text{AppellF1}\left[2,\,-m,\,-2+m,\,3,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]+b\,c\,m\,x\,\text{AppellF1}\left[3,\,1-m,\,-2+m,\right.$$
$$\left.4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]-a\,d\,(-2+m)\,x\,\text{AppellF1}\left[3,\,-m,\,-1+m,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\Big)+$$
$$\left(16\,a\,c\,e\,f^2\,x^3\,\text{AppellF1}\left[3,\,-m,\,-2+m,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\Big/$$
$$\Big(4\,a\,c\,\text{AppellF1}\left[3,\,-m,\,-2+m,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]+b\,c\,m\,x\,\text{AppellF1}\left[4,\,1-m,\,-2+m,\right.$$
$$\left.5,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]-a\,d\,(-2+m)\,x\,\text{AppellF1}\left[4,\,-m,\,-1+m,\,5,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\Big)+$$
$$\left(5\,a\,c\,f^3\,x^4\,\text{AppellF1}\left[4,\,-m,\,-2+m,\,5,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\Big/$$
$$\Big(5\,a\,c\,\text{AppellF1}\left[4,\,-m,\,-2+m,\,5,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]+$$
$$b\,c\,m\,x\,\text{AppellF1}\left[5,\,1-m,\,-2+m,\,6,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]-$$
$$a\,d\,(-2+m)\,x\,\text{AppellF1}\left[5,\,-m,\,-1+m,\,6,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\Big)-\frac{1}{d\,(-3+m)}$$
$$4\,e^3\,\left(\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right)^{-m}\,(c+d\,x)\,\text{Hypergeometric2F1}\left[3-m,\,-m,\,4-m,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)$$

Problem 3112: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 262 leaves, 4 steps):

$$-\frac{f\left(a d f (4-m)-b\left(6 d e-c f(2+m)\right)\right)(a+b x)^{1+m}(c+d x)^{3-m}}{20 b^2 d^2}+\frac{f(a+b x)^{1+m}(c+d x)^{3-m}(e+f x)}{5 b d}+\frac{1}{20 b^5 d^2(1+m)}(b c-a d)^2\left(a^2 d^2 f^2\left(12-7 m+m^2\right)-2 a b d f(3-m)\left(5 d e-c f(1+m)\right)+b^2\left(20 d^2 e^2-10 c d e f(1+m)+c^2 f^2\left(2+3 m+m^2\right)\right)\right)(a+b x)^{1+m}(c+d x)^{-m}\left(\frac{b(c+d x)}{b c-a d}\right)^m \text{Hypergeometric2F1}\left[-2+m,1+m,2+m,-\frac{d(a+b x)}{b c-a d}\right]$$

Result (type 6, 340 leaves):

$$\frac{1}{3}(a+b x)^m(c+d x)^{2-m}\left(\left(9 a c e f x^2 \text{AppellF1}\left[2,-m,-2+m,3,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\Big/\left(3 a c \text{AppellF1}\left[2,-m,-2+m,3,-\frac{b x}{a},-\frac{d x}{c}\right]+b c m x \text{AppellF1}\left[3,1-m,-2+m,4,-\frac{b x}{a},-\frac{d x}{c}\right]-a d(-2+m) x \text{AppellF1}\left[3,-m,-1+m,4,-\frac{b x}{a},-\frac{d x}{c}\right]\right)+\left(4 a c f^2 x^3 \text{AppellF1}\left[3,-m,-2+m,4,-\frac{b x}{a},-\frac{d x}{c}\right]\right)\Big/\left(4 a c \text{AppellF1}\left[3,-m,-2+m,4,-\frac{b x}{a},-\frac{d x}{c}\right]+b c m x \text{AppellF1}\left[4,1-m,-2+m,5,-\frac{b x}{a},-\frac{d x}{c}\right]-a d(-2+m) x \text{AppellF1}\left[4,-m,-1+m,5,-\frac{b x}{a},-\frac{d x}{c}\right]\right)-\frac{1}{d(-3+m)}3 e^2\left(\frac{d(a+b x)}{-b c+a d}\right)^{-m}(c+d x) \text{Hypergeometric2F1}\left[3-m,-m,4-m,\frac{b(c+d x)}{b c-a d}\right]\right)$$

Problem 3113: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 147 leaves, 3 steps):

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

Result (type 6, 509 leaves):

$$c\,(a+b\,x)^m\,(c+d\,x)^{-m}\left(\left(3\,a\,c\,(2\,d\,e+c\,f)\,x^2\,\text{AppellF1}\left[2,-m,m,3,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]\right)\Big/\left(6\,a\,c\,\text{AppellF1}\left[2,-m,m,3,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]+2\,m\,x\left(b\,c\,\text{AppellF1}\left[3,1-m,m,4,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]-a\,d\,\text{AppellF1}\left[3,-m,1+m,4,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]\right)\right)+\left(4\,a\,d\,(d\,e+2\,c\,f)\,x^3\,\text{AppellF1}\left[3,-m,m,4,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]\right)\Big/\left(3\left(4\,a\,c\,\text{AppellF1}\left[3,-m,m,4,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]+b\,c\,m\,x\,\text{AppellF1}\left[4,1-m,m,5,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]-a\,d\,m\,x\,\text{AppellF1}\left[4,-m,1+m,5,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]\right)\right)+\left(5\,a\,d^2\,f\,x^4\,\text{AppellF1}\left[4,-m,m,5,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]\right)\Big/\left(20\,a\,c\,\text{AppellF1}\left[4,-m,m,5,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]+4\,b\,c\,m\,x\,\text{AppellF1}\left[5,1-m,m,6,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]-4\,a\,d\,m\,x\,\text{AppellF1}\left[5,-m,1+m,6,-\frac{b\,x}{a},-\frac{d\,x}{c}\right]\right)-\frac{c^2\,e\left(\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right)^{-m}\text{Hypergeometric2F1}\left[1-m,-m,2-m,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d\,(-1+m)}-\frac{c\,e\,x\left(\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right)^{-m}\text{Hypergeometric2F1}\left[1-m,-m,2-m,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{-1+m}\right)$$

Problem 3114: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 84 leaves, 2 steps):

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

Result (type 6, 319 leaves):

$$\frac{1}{d}c\,(a+b\,x)^m\,(c+d\,x)^{-m}\left(\left(3\,a\,c\,d^2\,x^2\,\text{AppellF1}\left[2,\,-m,\,m,\,3,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\Big/\left(3\,a\,c\,\text{AppellF1}\left[2,\,-m,\,m,\,3,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]+m\,x\left(b\,c\,\text{AppellF1}\left[3,\,1-m,\,m,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]-a\,d\,\text{AppellF1}\left[3,\,-m,\,1+m,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\right)+\left(4\,a\,d^3\,x^3\,\text{AppellF1}\left[3,\,-m,\,m,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)\Big/\left(12\,a\,c\,\text{AppellF1}\left[3,\,-m,\,m,\,4,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]+3\,b\,c\,m\,x\,\text{AppellF1}\left[4,\,1-m,\,m,\,5,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]-3\,a\,d\,m\,x\,\text{AppellF1}\left[4,\,-m,\,1+m,\,5,\,-\frac{b\,x}{a},\,-\frac{d\,x}{c}\right]\right)-\frac{1}{-1+m}c\left(\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right)^{-m}(c+d\,x)\,\text{Hypergeometric2F1}\left[1-m,\,-m,\,2-m,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)$$

Problem 3115: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 370 leaves, 6 steps):

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

Result (type 6, 303 leaves):

$$-\left(\left(\left((b c-a d)\ (b e-a f)^2\ (2+m)\ (a+b x)^{1+m}\ (c+d x)^{2-m}\ \text{AppellF1}\left[1+m,-2+m,1,2+m,\frac{d\ (a+b x)}{-b c+a d},\frac{f\ (a+b x)}{-b e+a f}\right]\right)\Big/\left(b\ (-b e+a f)\ (1+m)\ (e+f x)\left((b c-a d)\ (b e-a f)\ (2+m)\ \text{AppellF1}\left[1+m,-2+m,1,2+m,\frac{d\ (a+b x)}{-b c+a d},\frac{f\ (a+b x)}{-b e+a f}\right]+(a+b x)\left((-b c f+a d f)\ \text{AppellF1}\left[2+m,-2+m,2,3+m,\frac{d\ (a+b x)}{-b c+a d},\frac{f\ (a+b x)}{-b e+a f}\right]-d\ (b e-a f)\ (-2+m)\ \text{AppellF1}\left[2+m,-1+m,1,3+m,\frac{d\ (a+b x)}{-b c+a d},\frac{f\ (a+b x)}{-b e+a f}\right]\right)\right)\right)\right)$$

Problem 3116: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 316 leaves, 7 steps):

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

Result (type 6, 291 leaves):

$$\left((b c-a d)\ (b e-a f)\ (2+m)\ (a+b x)^{1+m}\ (c+d x)^{2-m}\ \text{AppellF1}\left[1+m,-2+m,2,2+m,\frac{d\ (a+b x)}{-b c+a d},\frac{f\ (a+b x)}{-b e+a f}\right]\right)\Big/\left(b\ (1+m)\ (e+f x)^2\left((b c-a d)\ (b e-a f)\ (2+m)\ \text{AppellF1}\left[1+m,-2+m,2,2+m,\frac{d\ (a+b x)}{-b c+a d},\frac{f\ (a+b x)}{-b e+a f}\right]+(a+b x)\left((-2 b c f+2 a d f)\ \text{AppellF1}\left[2+m,-2+m,3,3+m,\frac{d\ (a+b x)}{-b c+a d},\frac{f\ (a+b x)}{-b e+a f}\right]-d\ (b e-a f)\ (-2+m)\ \text{AppellF1}\left[2+m,-1+m,2,3+m,\frac{d\ (a+b x)}{-b c+a d},\frac{f\ (a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3117: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 362 leaves, 7 steps):

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

Result (type 6, 304 leaves):

$$-\left(\left((b c-a d) (b e-a f)^4 (2+m) (a+b x)^{1+m} (c+d x)^{2-m}\right.\right.$$
$$\left.\text{AppellF1}\left[1+m,-2+m,3,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\Big/\left(b (-b e+a f)^3 (1+m) (e+f x)^3\right.$$
$$\left((b c-a d) (b e-a f) (2+m) \text{AppellF1}\left[1+m,-2+m,3,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]+\right.$$
$$(a+b x) \left((-3 b c f+3 a d f) \text{AppellF1}\left[2+m,-2+m,4,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]-\right.$$
$$\left.\left.\left.\left.d (b e-a f) (-2+m) \text{AppellF1}\left[2+m,-1+m,3,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)\right)$$

Problem 3119: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 176 leaves, 2 steps):

$$-\frac{f (a+b x)^{1+m} (c+d x)^{3-m}}{4 (b e-a f) (d e-c f) (e+f x)^4}+$$

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

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

Result (type 5, 3314 leaves):

$$-\left(\left((a+b x)^{1+m} (c+d x)^{3-m}\right.\right.$$

$$\left(\left(-4 b e+a f (1+m)+b f (-3+m) x\right) \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, -2+m\right]+\right.$$

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

$$12 b e \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, m\right]+$$

$$6 a f \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, m\right]+$$

$$6 a f m \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, m\right]-6 b f x \text{HurwitzLerchPhi}\left[\right.$$

$$\left.\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, m\right]+6 b f m x \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, m\right]+$$

$$4 b e \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 1+m\right]-$$

$$4 a f \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 1+m\right]-$$

$$4 a f m \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 1+m\right]-$$

$$4 b f m x \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 1+m\right]+$$

$$a f \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 2+m\right]+$$

$$a f m \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 2+m\right]+$$

$$b f x \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 2+m\right]+$$

$$\left.\left.b f m x \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 2+m\right]\right)\right) \Big/$$

$$\Bigg(4\,(e+f\,x)^4\,\Bigg(\,(b\,e-a\,f)\,(c+d\,x)\,\big(3\,b\,e-a\,f\,(1+m)-b\,f\,(-2+m)\,x\big)$$

$$\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,-2+m\Big]+\Big(a^2\,f\,(1+m)\,\big(-4\,c\,f+d\,(e-3\,f\,x)\big)-$$

$$b^2\,\big(d\,e\,x\,(9\,e+f\,(5-4\,m)\,x)+c\,(6\,e^2-3\,e\,f\,m\,x+f^2\,(-2+m)\,x^2)\big)+$$

$$a\,b\,\big(c\,f\,(3\,e\,(4+m)+f\,(4-5\,m)\,x)+d\,(-3\,e^2+e\,f\,(8+5\,m)\,x-3\,f^2\,(-1+m)\,x^2)\big)\Big)$$

$$\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,-1+m\Big]+$$

$$3\,b^2\,c\,e^2\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]+$$

$$6\,a\,b\,d\,e^2\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]-$$

$$12\,a\,b\,c\,e\,f\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]-$$

$$3\,a^2\,d\,e\,f\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]+$$

$$6\,a^2\,c\,f^2\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]-$$

$$3\,a\,b\,c\,e\,f\,m\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]-$$

$$3\,a^2\,d\,e\,f\,m\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]+$$

$$6\,a^2\,c\,f^2\,m\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]+$$

$$9\,b^2\,d\,e^2\,x\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]-$$

$$6\,b^2\,c\,e\,f\,x\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]-$$

$$6\,a\,b\,d\,e\,f\,x\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]+$$

$$3\,a^2\,d\,f^2\,x\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]-$$

$$3\,b^2\,c\,e\,f\,m\,x\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]-$$

$$9\,a\,b\,d\,e\,f\,m\,x\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]+$$

$$9\,a\,b\,c\,f^2\,m\,x\,\text{HurwitzLerchPhi}\Big[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},\,1,\,m\Big]+$$

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

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

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

$$6 b^2 d e f m x^2 \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, m\right] +$$

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

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

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

$$4 a b c e f \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 1 + m\right] +$$

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

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

$$a b c e f m \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 1 + m\right] +$$

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

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

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

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

$$4 a b d e f x \text{HurwitzLerchPhi}\left[\frac{(d e - c f) (a + b x)}{(b e - a f) (c + d x)}, 1, 1 + m\right] -$$

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

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

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

$$7\,a\,b\,d\,e\,f\,m\,x\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,1+m\right]-$$

$$7\,a\,b\,c\,f^2\,m\,x\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,1+m\right]-$$

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

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

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

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

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

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

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

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

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

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

$$2\,a\,b\,d\,e\,f\,x\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,2+m\right]+$$

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

$$2\,a\,b\,d\,e\,f\,m\,x\,\text{HurwitzLerchPhi}\left[\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)},1,2+m\right]+$$

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

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

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

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

$$b^2 c f^2 m x^2 \text{HurwitzLerchPhi}\left[\frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}, 1, 2+m\right]\Bigg)\Bigg)\Bigg)$$

Problem 3120: Result more than twice size of optimal antiderivative.

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

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

$$-\frac{f (a+b x)^{1+m} (c+d x)^{3-m}}{5 (b e-a f) (d e-c f) (e+f x)^5}-\frac{f (b (6 d e-c f (4-m))-a d f (2+m)) (a+b x)^{1+m} (c+d x)^{3-m}}{20 (b e-a f)^2 (d e-c f)^2 (e+f x)^4}-\left((b c-a d)^3 \left(2 a b d f (5 d e-c f (3-m)) (1+m)-a^2 d^2 f^2 \left(2+3 m+m^2\right)-b^2 \left(20 d^2 e^2-10 c d e f (3-m)+c^2 f^2 \left(12-7 m+m^2\right)\right)\right) (a+b x)^{1+m} (c+d x)^{-1-m} \text{Hypergeometric2F1}\left[4, 1+m, 2+m, \frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}\right]\right)\Big/\left(20 (b e-a f)^6 (d e-c f)^2 (1+m)\right)$$

Result (type 5, 29 088 leaves): Display of huge result suppressed!

Problem 3121: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^m (c+d x)^{2-m}}{(e+f x)^7} \, dx$$

Optimal (type 5, 541 leaves, 5 steps):

$$-\frac{f (a+b x)^{1+m} (c+d x)^{3-m}}{6 (b e-a f) (d e-c f) (e+f x)^6}-\frac{f (b (8 d e-c f (5-m))-a d f (3+m)) (a+b x)^{1+m} (c+d x)^{3-m}}{30 (b e-a f)^2 (d e-c f)^2 (e+f x)^5}-\left(f \left(a^2 d^2 f^2 \left(6+5 m+m^2\right)-2 a b d f \left(d e (12+7 m)-c f \left(6+2 m-m^2\right)\right)+b^2 \left(38 d^2 e^2-2 c d e f (26-7 m)+c^2 f^2 \left(20-9 m+m^2\right)\right)\right) (a+b x)^{1+m} (c+d x)^{3-m}\right)\Big/\left(120 (b e-a f)^3 (d e-c f)^3 (e+f x)^4\right)+\frac{1}{120 (b e-a f)^7 (d e-c f)^3 (1+m)}(b c-a d)^3 \left(3 a^2 b d^2 f^2 (6 d e-c f (3-m)) \left(2+3 m+m^2\right)-a^3 d^3 f^3 \left(6+11 m+6 m^2+m^3\right)-3 a b^2 d f (1+m) \left(30 d^2 e^2-12 c d e f (3-m)+c^2 f^2 \left(12-7 m+m^2\right)\right)+b^3 \left(120 d^3 e^3-90 c d^2 e^2 f (3-m)+18 c^2 d e f^2 \left(12-7 m+m^2\right)-c^3 f^3 \left(60-47 m+12 m^2-m^3\right)\right)\right) (a+b x)^{1+m} (c+d x)^{-1-m} \text{Hypergeometric2F1}\left[4, 1+m, 2+m, \frac{(d e-c f) (a+b x)}{(b e-a f) (c+d x)}\right]$$

Result (type 5, 79 140 leaves): Display of huge result suppressed!

Problem 3122: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 488 leaves, 7 steps):

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

Result (type 6, 303 leaves):

$$-\left(\left((b c-a d) (b e-a f)^2 (2+m) (a+b x)^{1+m} (c+d x)^{3-m} \text{AppellF1}\left[1+m,-3+m,1,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\Big/\left(b (-b e+a f) (1+m) (e+f x) \left((b c-a d) (b e-a f) (2+m) \text{AppellF1}\left[1+m,-3+m,1,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]+(a+b x) \left((-b c f+a d f) \text{AppellF1}\left[2+m,-3+m,2,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]-d (b e-a f) (-3+m) \text{AppellF1}\left[2+m,-2+m,1,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)\right)$$

Problem 3123: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 397 leaves, 2 steps):

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

Result (type 6, 291 leaves):

$$\left((b c-a d) (b e-a f) (2+m) (a+b x)^{1+m} (c+d x)^{3-m} \text{AppellF1}\left[1+m, -3+m, 2, 2+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]\right) \Big/ \left(b (1+m) (e+f x)^2 \left((b c-a d) (b e-a f) (2+m) \text{AppellF1}\left[1+m, -3+m, 2, 2+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]+(a+b x) \left((-2 b c f+2 a d f) \text{AppellF1}\left[2+m, -3+m, 3, 3+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]-d (b e-a f) (-3+m) \text{AppellF1}\left[2+m, -2+m, 2, 3+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3124: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 453 leaves, 8 steps):

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

Result (type 6, 304 leaves) :

$$-\Big(\Big(\Big((b c-a d) (b e-a f)^4 (2+m) (a+b x)^{1+m} (c+d x)^{3-m}$$
$$\text{AppellF1}\Big[1+m,-3+m,3,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\Big]\Big)\Big/\Big(b (-b e+a f)^3 (1+m) (e+f x)^3$$
$$\Big((b c-a d) (b e-a f) (2+m) \text{AppellF1}\Big[1+m,-3+m,3,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\Big]+$$
$$(a+b x) \Big((-3 b c f+3 a d f) \text{AppellF1}\Big[2+m,-3+m,4,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\Big]-$$
$$d (b e-a f) (-3+m) \text{AppellF1}\Big[2+m,-2+m,3,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\Big]\Big)\Big)\Big)\Big)$$

Problem 3125: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 245 leaves, 6 steps) :

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

Result (type 6, 1073 leaves) :

$$\frac{1}{4} (a+b x)^{-n} (c+d x)^n \Bigg(\Big(3 a c x^2 \text{AppellF1}\big[2, n, -n, 3, -\tfrac{b x}{a}, -\tfrac{d x}{c}\big]\Big) \Big/ \Big(3 a c \text{AppellF1}\big[2, n, -n, 3, -\tfrac{b x}{a}, -\tfrac{d x}{c}\big] + n x \Big(a d \text{AppellF1}\big[3, n, 1-n, 4, -\tfrac{b x}{a}, -\tfrac{d x}{c}\big] - b c \text{AppellF1}\big[3, 1+n, -n, 4, -\tfrac{b x}{a}, -\tfrac{d x}{c}\big]\Big)\Big) + \Big(2 a c (b c - a d) (-2+n) (a+b x) \text{AppellF1}\big[1-n, -n, 1, 2-n, \tfrac{d (a+b x)}{-b c+a d}, \tfrac{2 d (a+b x)}{-b c+a d}\big]\Big) \Big/ \Big(b (-1+n) (a d + b (c + 2 d x)) \Big(-(b c - a d) (-2+n) \text{AppellF1}\big[1-n, -n, 1, 2-n, \tfrac{d (a+b x)}{-b c+a d}, \tfrac{2 d (a+b x)}{-b c+a d}\big] + d (a+b x) \Big(n \text{AppellF1}\big[2-n, 1-n, 1, 3-n, \tfrac{d (a+b x)}{-b c+a d}, \tfrac{2 d (a+b x)}{-b c+a d}\big] - 2 \text{AppellF1}\big[2-n, -n, 2, 3-n, \tfrac{d (a+b x)}{-b c+a d}, \tfrac{2 d (a+b x)}{-b c+a d}\big]\Big)\Big)\Big) - \Big(c^2 (b c - a d) (-2+n) (a+b x) \text{AppellF1}\big[1-n, -n, 1, 2-n, \tfrac{d (a+b x)}{-b c+a d}, \tfrac{2 d (a+b x)}{-b c+a d}\big]\Big) \Big/ \Big(d (-1+n) (a d + b (c + 2 d x)) \Big(-(b c - a d) (-2+n) \text{AppellF1}\big[1-n, -n, 1, 2-n, \tfrac{d (a+b x)}{-b c+a d}, \tfrac{2 d (a+b x)}{-b c+a d}\big] + d (a+b x) \Big(n \text{AppellF1}\big[2-n, 1-n, 1, 3-n, \tfrac{d (a+b x)}{-b c+a d}, \tfrac{2 d (a+b x)}{-b c+a d}\big] - 2 \text{AppellF1}\big[2-n, -n, 2, 3-n, \tfrac{d (a+b x)}{-b c+a d}, \tfrac{2 d (a+b x)}{-b c+a d}\big]\Big)\Big)\Big) + \Big(a^2 d (-b c + a d) (-2+n) (a+b x) \text{AppellF1}\big[1-n, -n, 1, 2-n, \tfrac{d (a+b x)}{-b c+a d}, \tfrac{2 d (a+b x)}{-b c+a d}\big]\Big) \Big/ \Big(b^2 (-1+n) (a d + b (c + 2 d x)) \Big(-(b c - a d) (-2+n) \text{AppellF1}\big[1-n, -n, 1, 2-n, \tfrac{d (a+b x)}{-b c+a d}, \tfrac{2 d (a+b x)}{-b c+a d}\big] + d (a+b x) \Big(n \text{AppellF1}\big[2-n, 1-n, 1, 3-n, \tfrac{d (a+b x)}{-b c+a d}, \tfrac{2 d (a+b x)}{-b c+a d}\big] - 2 \text{AppellF1}\big[2-n, -n, 2, 3-n, \tfrac{d (a+b x)}{-b c+a d}, \tfrac{2 d (a+b x)}{-b c+a d}\big]\Big)\Big)\Big) + \frac{c \left(\frac{d (a+b x)}{-b c+a d}\right)^n (c+d x) \text{Hypergeometric2F1}\big[n, 1+n, 2+n, \frac{b (c+d x)}{b c-a d}\big]}{d^2 (1+n)} + \frac{a \left(\frac{d (a+b x)}{-b c+a d}\right)^n (c+d x) \text{Hypergeometric2F1}\big[n, 1+n, 2+n, \frac{b (c+d x)}{b c-a d}\big]}{b d (1+n)}\Bigg)$$

Problem 3126: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

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

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

Result (type 6, 904 leaves):

$$\left((a+b x)^{-n} (c+d x)^{n} \left(-b^2 c^2 (-1+n) \text{AppellF1}\left[1,-n,n,2,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.\right.$$
$$2 a b c d (-1+n) \text{AppellF1}\left[1,-n,n,2,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]-$$
$$a^2 d^2 (-1+n) \text{AppellF1}\left[1,-n,n,2,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]+a d \left(\frac{b (c+d x)}{b c-a d}\right)^{-n}$$
$$\left(2 (a d+b (c+2 d x)) \text{AppellF1}\left[1,-n,n,2,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.$$
$$(b c-a d) n \left(\text{AppellF1}\left[2,1-n,n,3,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.$$
$$\left.\left.\text{AppellF1}\left[2,-n,1+n,3,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\right)$$
$$\text{Hypergeometric2F1}\left[1-n,-n,2-n,\frac{d (a+b x)}{-b c+a d}\right]+b d x \left(\frac{b (c+d x)}{b c-a d}\right)^{-n}$$
$$\left(2 (a d+b (c+2 d x)) \text{AppellF1}\left[1,-n,n,2,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.$$
$$(b c-a d) n \left(\text{AppellF1}\left[2,1-n,n,3,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.$$
$$\left.\left.\text{AppellF1}\left[2,-n,1+n,3,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\right)$$
$$\left.\left.\text{Hypergeometric2F1}\left[1-n,-n,2-n,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)\Big/\left(4 b^2 d^2 (1-n)\right.$$
$$\left(2 (a d+b (c+2 d x)) \text{AppellF1}\left[1,-n,n,2,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.$$
$$(b c-a d) n \left(\text{AppellF1}\left[2,1-n,n,3,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.$$
$$\left.\left.\left.\text{AppellF1}\left[2,-n,1+n,3,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\right)\right)$$

Problem 3127: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 230 leaves, 7 steps):

$$-\frac{(b\,c-a\,d)\,(a+b\,x)^{1-n}\,(c+d\,x)^n}{8\,b^2\,d\,(b\,c+a\,d+2\,b\,d\,x)^2}-\frac{(1+2\,n)\,(a+b\,x)^{1-n}\,(c+d\,x)^n}{8\,b^2\,d\,(b\,c+a\,d+2\,b\,d\,x)}-\frac{1}{8\,b^2\,d^2\,n}$$
$$\left(1-2\,n^2\right)\,(a+b\,x)^{-n}\,(c+d\,x)^n\,\text{Hypergeometric2F1}\left[1,\,n,\,1+n,\,-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]+\frac{1}{8\,b^2\,d^2\,n}$$
$$(a+b\,x)^{-n}\left(-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right)^n\,(c+d\,x)^n\,\text{Hypergeometric2F1}\left[n,\,n,\,1+n,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]$$

Result (type 6, 1027 leaves) :

$$\frac{1}{16\left(a d+b\left(c+2 d x\right)\right)}$$

$$\left(a+b x\right)^{-n}\left(c+d x\right)^{n}\left(\left(3 a^{2}\,\text{AppellF1}\left[2,-n,n,3,\frac{-b c+a d}{a d+b\left(c+2 d x\right)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\Big/\right.$$

$$\left(b^{2}\left(3\left(a d+b\left(c+2 d x\right)\right)\text{AppellF1}\left[2,-n,n,3,\frac{-b c+a d}{a d+b\left(c+2 d x\right)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.\right.$$

$$\left(b c-a d\right) n\left(\text{AppellF1}\left[3,1-n,n,4,\frac{-b c+a d}{a d+b\left(c+2 d x\right)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.$$

$$\left.\left.\left.\text{AppellF1}\left[3,-n,1+n,4,\frac{-b c+a d}{a d+b\left(c+2 d x\right)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\right)\right)+$$

$$\left(3 c^{2}\,\text{AppellF1}\left[2,-n,n,3,\frac{-b c+a d}{a d+b\left(c+2 d x\right)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\Big/$$

$$\left(d^{2}\left(3\left(a d+b\left(c+2 d x\right)\right)\text{AppellF1}\left[2,-n,n,3,\frac{-b c+a d}{a d+b\left(c+2 d x\right)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.\right.$$

$$\left(b c-a d\right) n\left(\text{AppellF1}\left[3,1-n,n,4,\frac{-b c+a d}{a d+b\left(c+2 d x\right)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.$$

$$\left.\left.\left.\text{AppellF1}\left[3,-n,1+n,4,\frac{-b c+a d}{a d+b\left(c+2 d x\right)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\right)\right)-$$

$$\left(6 a c\,\text{AppellF1}\left[2,-n,n,3,\frac{-b c+a d}{a d+b\left(c+2 d x\right)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\Big/$$

$$\left(b d\left(3\left(a d+b\left(c+2 d x\right)\right)\text{AppellF1}\left[2,-n,n,3,\frac{-b c+a d}{a d+b\left(c+2 d x\right)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.\right.$$

$$\left(b c-a d\right) n\left(\text{AppellF1}\left[3,1-n,n,4,\frac{-b c+a d}{a d+b\left(c+2 d x\right)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.$$

$$\left.\left.\left.\text{AppellF1}\left[3,-n,1+n,4,\frac{-b c+a d}{a d+b\left(c+2 d x\right)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\right)\right)+$$

$$\left(4\left(b c-a d\right)\left(2+n\right)\left(c+d x\right)\text{AppellF1}\left[1+n,n,1,2+n,\frac{b\left(c+d x\right)}{b c-a d},\frac{2 b\left(c+d x\right)}{b c-a d}\right]\right)\Big/$$

$$\left(b d^{2}\left(1+n\right)\left(\left(b c-a d\right)\left(2+n\right)\text{AppellF1}\left[1+n,n,1,2+n,\frac{b\left(c+d x\right)}{b c-a d},\frac{2 b\left(c+d x\right)}{b c-a d}\right]+\right.\right.$$

$$b\left(c+d x\right)\left(2\,\text{AppellF1}\left[2+n,n,2,3+n,\frac{b\left(c+d x\right)}{b c-a d},\frac{2 b\left(c+d x\right)}{b c-a d}\right]+\right.$$

$$\left.\left.\left.\left.n\,\text{AppellF1}\left[2+n,1+n,1,3+n,\frac{b\left(c+d x\right)}{b c-a d},\frac{2 b\left(c+d x\right)}{b c-a d}\right]\right)\right)\right)\right)$$

Problem 3128: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 71 leaves, 1 step):

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

Result (type 6, 543 leaves):

$$\frac{1}{12 b^2 d^2} (a+b x)^{-n} (c+d x)^n \left(-\left(\left(3 \text{AppellF1}\left[1, -n, n, 2, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right) \Big/ \left(2 (a d+b (c+2 d x)) \text{AppellF1}\left[1, -n, n, 2, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right] + (b c-a d) n \left(\text{AppellF1}\left[2, 1-n, n, 3, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right] + \text{AppellF1}\left[2, -n, 1+n, 3, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right)\right)\right) + \left(2 (b c-a d)^2 \text{AppellF1}\left[3, -n, n, 4, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right) \Big/ \left((a d+b (c+2 d x))^2 \left(4 (a d+b (c+2 d x)) \text{AppellF1}\left[3, -n, n, 4, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right] + (b c-a d) n \left(\text{AppellF1}\left[4, 1-n, n, 5, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right] + \text{AppellF1}\left[4, -n, 1+n, 5, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right)\right)\right)\right)$$

Problem 3129: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 231 leaves, 6 steps):

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

Result (type 6, 269 leaves):

$$-\left(\left((b c-a d)(2+m)(a+b x)^{1+m}(c+d x)^{2-m} \text{AppellF1}\left[1+m,-2+m,1,2+m,\frac{d (a+b x)}{-b c+a d},\frac{2 d (a+b x)}{-b c+a d}\right]\right)\Big/\left(b (1+m)(a d+b (c+2 d x))\left(-(b c-a d)(2+m) \text{AppellF1}\left[1+m,-2+m,1,2+m,\frac{d (a+b x)}{-b c+a d},\frac{2 d (a+b x)}{-b c+a d}\right]+d (a+b x)\left(2 \text{AppellF1}\left[2+m,-2+m,2,3+m,\frac{d (a+b x)}{-b c+a d},\frac{2 d (a+b x)}{-b c+a d}\right]+(-2+m) \text{AppellF1}\left[2+m,-1+m,1,3+m,\frac{d (a+b x)}{-b c+a d},\frac{2 d (a+b x)}{-b c+a d}\right]\right)\right)\right)\right)$$

Problem 3130: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 144 leaves, 4 steps):

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

Result (type 6, 1377 leaves):

$$\frac{1}{4 b^3}(a+b x)^m (c+d x)^{-m}\left(\left(2 a b c \text{AppellF1}\left[1,m,-m,2,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\Big/\left(2 (a d+b (c+2 d x)) \text{AppellF1}\left[1,m,-m,2,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]-(b c-a d) m \left(\text{AppellF1}\left[2,m,1-m,3,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.\right.\right.$$

$$\text{AppellF1}\left[2,1+m,-m,3,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]\Bigg)\Bigg)\Bigg)-$$

$$\left(b^2 c^2\,\text{AppellF1}\left[1,m,-m,2,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\Bigg/$$

$$\Bigg(d\,\Bigg(2 \left(a d+b (c+2 d x)\right) \text{AppellF1}\left[1,m,-m,2,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]-$$

$$(b c-a d)\, m\, \Bigg(\text{AppellF1}\left[2,m,1-m,3,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]+$$

$$\text{AppellF1}\left[2,1+m,-m,3,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]\Bigg)\Bigg)\Bigg)-$$

$$\left(a^2 d\,\text{AppellF1}\left[1,m,-m,2,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\Bigg/$$

$$\Bigg(2 \left(a d+b (c+2 d x)\right) \text{AppellF1}\left[1,m,-m,2,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]-$$

$$(b c-a d)\, m\, \Bigg(\text{AppellF1}\left[2,m,1-m,3,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]+$$

$$\text{AppellF1}\left[2,1+m,-m,3,\frac{-b c+a d}{a d+b (c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]\Bigg)\Bigg)-$$

$$\left(2 b^2 c\,(b c-a d)\,(-2+m)\,(c+d x)\,\text{AppellF1}\left[1-m,-m,1,2-m,\frac{b (c+d x)}{b c-a d},\frac{2 b (c+d x)}{b c-a d}\right]\right)\Bigg/$$

$$\Bigg(d\,(-1+m)\,\left(a d+b (c+2 d x)\right)$$

$$\Bigg((b c-a d)\,(-2+m)\,\text{AppellF1}\left[1-m,-m,1,2-m,\frac{b (c+d x)}{b c-a d},\frac{2 b (c+d x)}{b c-a d}\right]+$$

$$b\,(c+d x)\,\Bigg(m\,\text{AppellF1}\left[2-m,1-m,1,3-m,\frac{b (c+d x)}{b c-a d},\frac{2 b (c+d x)}{b c-a d}\right]-$$

$$2\,\text{AppellF1}\left[2-m,-m,2,3-m,\frac{b (c+d x)}{b c-a d},\frac{2 b (c+d x)}{b c-a d}\right]\Bigg)\Bigg)\Bigg)-$$

$$\left(2 a b\,(-b c+a d)\,(-2+m)\,(c+d x)\,\text{AppellF1}\left[1-m,-m,1,2-m,\frac{b (c+d x)}{b c-a d},\frac{2 b (c+d x)}{b c-a d}\right]\right)\Bigg/$$

$$\Bigg((-1+m)\,\left(a d+b (c+2 d x)\right)$$

$$\Bigg((b c-a d)\,(-2+m)\,\text{AppellF1}\left[1-m,-m,1,2-m,\frac{b (c+d x)}{b c-a d},\frac{2 b (c+d x)}{b c-a d}\right]+$$

$$b\,(c+d x)\,\Bigg(m\,\text{AppellF1}\left[2-m,1-m,1,3-m,\frac{b (c+d x)}{b c-a d},\frac{2 b (c+d x)}{b c-a d}\right]-$$

$$2\,\text{AppellF1}\left[2-m,-m,2,3-m,\frac{b (c+d x)}{b c-a d},\frac{2 b (c+d x)}{b c-a d}\right]\Bigg)\Bigg)\Bigg)+$$

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

Problem 3131: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 261 leaves, 7 steps):

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

Result (type 6, 1593 leaves):

$$\frac{1}{16 b^3}(a+b x)^m (c+d x)^{-m}\left(\left(8 a \text{AppellF1}\left[1,m,-m,2,\frac{-b c+a d}{a d+b(c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\Big/\right.$$
$$\left(2 (a d+b(c+2 d x)) \text{AppellF1}\left[1,m,-m,2,\frac{-b c+a d}{a d+b(c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]-\right.$$
$$(b c-a d) m\left(\text{AppellF1}\left[2,m,1-m,3,\frac{-b c+a d}{a d+b(c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.$$
$$\left.\left.\text{AppellF1}\left[2,1+m,-m,3,\frac{-b c+a d}{a d+b(c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\right)-$$
$$\left(8 b c \text{AppellF1}\left[1,m,-m,2,\frac{-b c+a d}{a d+b(c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\Big/$$
$$\left(d\left(2 (a d+b(c+2 d x)) \text{AppellF1}\left[1,m,-m,2,\frac{-b c+a d}{a d+b(c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]-\right.\right.$$
$$(b c-a d) m\left(\text{AppellF1}\left[2,m,1-m,3,\frac{-b c+a d}{a d+b(c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]+\right.$$
$$\left.\left.\left.\text{AppellF1}\left[2,1+m,-m,3,\frac{-b c+a d}{a d+b(c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\right)\right)+$$
$$\left(6 a b c \text{AppellF1}\left[2,m,-m,3,\frac{-b c+a d}{a d+b(c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]\right)\Big/\left((a d+b(c+2 d x))\right.$$
$$\left(3 (a d+b(c+2 d x)) \text{AppellF1}\left[2,m,-m,3,\frac{-b c+a d}{a d+b(c+2 d x)},\frac{b c-a d}{b c+a d+2 b d x}\right]-\right.$$

$$\left(b c-a d\right) m \left(\text{AppellF1}\left[3, m, 1-m, 4, \frac{-b c+a d}{a d+b \left(c+2 d x\right)}, \frac{b c-a d}{b c+a d+2 b d x}\right]+\text{AppellF1}\left[3, 1+m, -m, 4, \frac{-b c+a d}{a d+b \left(c+2 d x\right)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right)\Bigg)\Bigg)-$$
$$\left(3 b^2 c^2 \text{AppellF1}\left[2, m, -m, 3, \frac{-b c+a d}{a d+b \left(c+2 d x\right)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right)\Big/$$
$$\Bigg(d \left(a d+b \left(c+2 d x\right)\right)\Bigg(3 \left(a d+b \left(c+2 d x\right)\right) \text{AppellF1}\left[2, m, -m, 3, \frac{-b c+a d}{a d+b \left(c+2 d x\right)}, \frac{b c-a d}{b c+a d+2 b d x}\right]-$$
$$\left(b c-a d\right) m \left(\text{AppellF1}\left[3, m, 1-m, 4, \frac{-b c+a d}{a d+b \left(c+2 d x\right)}, \frac{b c-a d}{b c+a d+2 b d x}\right]+\text{AppellF1}\left[3, 1+m, -m, 4, \frac{-b c+a d}{a d+b \left(c+2 d x\right)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right)\Bigg)\Bigg)-$$
$$\left(3 a^2 d \text{AppellF1}\left[2, m, -m, 3, \frac{-b c+a d}{a d+b \left(c+2 d x\right)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right)\Big/$$
$$\Bigg(\left(a d+b \left(c+2 d x\right)\right)\Bigg(3 \left(a d+b \left(c+2 d x\right)\right) \text{AppellF1}\left[2, m, -m, 3, \frac{-b c+a d}{a d+b \left(c+2 d x\right)}, \frac{b c-a d}{b c+a d+2 b d x}\right]-$$
$$\left(b c-a d\right) m \left(\text{AppellF1}\left[3, m, 1-m, 4, \frac{-b c+a d}{a d+b \left(c+2 d x\right)}, \frac{b c-a d}{b c+a d+2 b d x}\right]+\text{AppellF1}\left[3, 1+m, -m, 4, \frac{-b c+a d}{a d+b \left(c+2 d x\right)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right)\Bigg)\Bigg)+$$
$$\left(4 b \left(-b c+a d\right) \left(-2+m\right) \left(c+d x\right) \text{AppellF1}\left[1-m, -m, 1, 2-m, \frac{b \left(c+d x\right)}{b c-a d}, \frac{2 b \left(c+d x\right)}{b c-a d}\right]\right)\Big/$$
$$\Bigg(d \left(-1+m\right) \left(a d+b \left(c+2 d x\right)\right)\Bigg(\left(b c-a d\right) \left(-2+m\right) \text{AppellF1}\left[1-m, -m, 1, 2-m, \frac{b \left(c+d x\right)}{b c-a d}, \frac{2 b \left(c+d x\right)}{b c-a d}\right]+$$
$$b \left(c+d x\right) \left(m \text{AppellF1}\left[2-m, 1-m, 1, 3-m, \frac{b \left(c+d x\right)}{b c-a d}, \frac{2 b \left(c+d x\right)}{b c-a d}\right]-2 \text{AppellF1}\left[2-m, -m, 2, 3-m, \frac{b \left(c+d x\right)}{b c-a d}, \frac{2 b \left(c+d x\right)}{b c-a d}\right]\right)\Bigg)\Bigg)$$

Problem 3132: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 65 leaves, 1 step):

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

Result (type 6, 812 leaves):

$$\frac{1}{24 b^3 d} (a+b x)^m (c+d x)^{-m} \left(-\left(\left(6 \text{AppellF1}\left[1, m, -m, 2, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right) \Big/ \left(2 (a d+b (c+2 d x)) \text{AppellF1}\left[1, m, -m, 2, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right] - (b c-a d) m \left(\text{AppellF1}\left[2, m, 1-m, 3, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right] + \text{AppellF1}\left[2, 1+m, -m, 3, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right)\right)\right) + \frac{1}{(a d+b (c+2 d x))^2} (b c-a d) \left(-\left(\left(9 (a d+b (c+2 d x)) \text{AppellF1}\left[2, m, -m, 3, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right) \Big/ \left(3 (a d+b (c+2 d x)) \text{AppellF1}\left[2, m, -m, 3, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right] - (b c-a d) m \left(\text{AppellF1}\left[3, m, 1-m, 4, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right] + \text{AppellF1}\left[3, 1+m, -m, 4, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right)\right)\right) - \left(4 (b c-a d) \text{AppellF1}\left[3, m, -m, 4, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right) \Big/ \left(4 (a d+b (c+2 d x)) \text{AppellF1}\left[3, m, -m, 4, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right] - (b c-a d) m \left(\text{AppellF1}\left[4, m, 1-m, 5, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right] + \text{AppellF1}\left[4, 1+m, -m, 5, \frac{-b c+a d}{a d+b (c+2 d x)}, \frac{b c-a d}{b c+a d+2 b d x}\right]\right)\right)\right)\right)$$

Problem 3133: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^m (c+d x)^{-m-n} (e+f x)^{n+p} \, dx$$

Optimal (type 6, 139 leaves, 3 steps):

$$\frac{1}{b(1+m)}(a+bx)^{1+m}(c+dx)^{-m-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{m+n}(e+fx)^{n+p}$$
$$\left(\frac{b(e+fx)}{be-af}\right)^{-n-p}\text{AppellF1}\left[1+m,\ m+n,\ -n-p,\ 2+m,\ -\frac{d(a+bx)}{bc-ad},\ -\frac{f(a+bx)}{be-af}\right]$$

Result (type 6, 323 leaves):

$$\left((bc-ad)(be-af)(2+m)(a+bx)^{1+m}(c+dx)^{-m-n}\right.$$
$$\left.(e+fx)^{n+p}\,\text{AppellF1}\left[1+m,\ m+n,\ -n-p,\ 2+m,\ \frac{d(a+bx)}{-bc+ad},\ \frac{f(a+bx)}{-be+af}\right]\right)\Big/$$
$$\left(b(1+m)\left((bc-ad)(be-af)(2+m)\right.\right.$$
$$\text{AppellF1}\left[1+m,\ m+n,\ -n-p,\ 2+m,\ \frac{d(a+bx)}{-bc+ad},\ \frac{f(a+bx)}{-be+af}\right]-(a+bx)$$
$$\left(-(bc-ad)f(n+p)\,\text{AppellF1}\left[2+m,\ m+n,\ 1-n-p,\ 3+m,\ \frac{d(a+bx)}{-bc+ad},\ \frac{f(a+bx)}{-be+af}\right]+\right.$$
$$\left.\left.\left.d(be-af)(m+n)\,\text{AppellF1}\left[2+m,\ 1+m+n,\ -n-p,\ 3+m,\ \frac{d(a+bx)}{-bc+ad},\ \frac{f(a+bx)}{-be+af}\right]\right)\right)\right)$$

Problem 3134: Result more than twice size of optimal antiderivative.

$$\int (a+bx)^m (c+dx)^{-m-n} (e+fx)^{1+n}\,dx$$

Optimal (type 6, 139 leaves, 3 steps):

$$\frac{1}{b^2(1+m)}(be-af)(a+bx)^{1+m}(c+dx)^{-m-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{m+n}(e+fx)^{n}$$
$$\left(\frac{b(e+fx)}{be-af}\right)^{-n}\text{AppellF1}\left[1+m,\ m+n,\ -1-n,\ 2+m,\ -\frac{d(a+bx)}{bc-ad},\ -\frac{f(a+bx)}{be-af}\right]$$

Result (type 6, 312 leaves):

$$\left((bc-ad)(be-af)(2+m)(a+bx)^{1+m}(c+dx)^{-m-n}(e+fx)^{1+n}\right.$$
$$\left.\text{AppellF1}\left[1+m,\ m+n,\ -1-n,\ 2+m,\ \frac{d(a+bx)}{-bc+ad},\ \frac{f(a+bx)}{-be+af}\right]\right)\Big/\left(b(1+m)\right.$$
$$\left((bc-ad)(be-af)(2+m)\,\text{AppellF1}\left[1+m,\ m+n,\ -1-n,\ 2+m,\ \frac{d(a+bx)}{-bc+ad},\ \frac{f(a+bx)}{-be+af}\right]-\right.$$
$$(a+bx)\left(-(bc-ad)f(1+n)\,\text{AppellF1}\left[2+m,\ m+n,\ -n,\ 3+m,\ \frac{d(a+bx)}{-bc+ad},\ \frac{f(a+bx)}{-be+af}\right]+\right.$$
$$\left.\left.\left.d(be-af)(m+n)\,\text{AppellF1}\left[2+m,\ 1+m+n,\ -1-n,\ 3+m,\ \frac{d(a+bx)}{-bc+ad},\ \frac{f(a+bx)}{-be+af}\right]\right)\right)\right)$$

Problem 3135: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 129 leaves, 3 steps):

$$\frac{1}{b (1+m)} (a+b x)^{1+m} (c+d x)^{-m-n} \left(\frac{b (c+d x)}{b c-a d}\right)^{m+n} (e+f x)^n \left(\frac{b (e+f x)}{b e-a f}\right)^{-n} \text{AppellF1}\left[1+m, m+n, -n, 2+m, -\frac{d (a+b x)}{b c-a d}, -\frac{f (a+b x)}{b e-a f}\right]$$

Result (type 6, 303 leaves):

$$\left((b c-a d) (b e-a f) (2+m) (a+b x)^{1+m} (c+d x)^{-m-n} (e+f x)^n \text{AppellF1}\left[1+m, m+n, -n, 2+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]\right) \Big/ \left(b (1+m) \left((b c-a d) (b e-a f) (2+m) \text{AppellF1}\left[1+m, m+n, -n, 2+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right] - (a+b x) \left((-b c+a d) f n \text{AppellF1}\left[2+m, m+n, 1-n, 3+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right] + d (b e-a f) (m+n) \text{AppellF1}\left[2+m, 1+m+n, -n, 3+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3136: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^m (c+d x)^{-m-n} (e+f x)^{-1+n} \, dx$$

Optimal (type 6, 138 leaves, 3 steps):

$$\left((a+b x)^{1+m} (c+d x)^{-m-n} \left(\frac{b (c+d x)}{b c-a d}\right)^{m+n} (e+f x)^n \left(\frac{b (e+f x)}{b e-a f}\right)^{-n} \text{AppellF1}\left[1+m, m+n, 1-n, 2+m, -\frac{d (a+b x)}{b c-a d}, -\frac{f (a+b x)}{b e-a f}\right]\right) \Big/ \left((b e-a f) (1+m)\right)$$

Result (type 6, 315 leaves):

$$-\Bigg(\Bigg(\Big(b\,c-a\,d\Big)\,\Big(b\,e-a\,f\Big)\,\Big(2+m\Big)\,\Big(a+b\,x\Big)^{1+m}\,\Big(c+d\,x\Big)^{-m-n}\,\Big(e+f\,x\Big)^{-1+n}\,\text{AppellF1}\Big[1+m,\,m+n,\,1-n,\,2+m,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\,\frac{f\,(a+b\,x)}{-b\,e+a\,f}\Big]\Bigg)\Big/\Bigg(b\,\Big(1+m\Big)\,\Bigg(-\Big(b\,c-a\,d\Big)\,\Big(b\,e-a\,f\Big)\,\Big(2+m\Big)\,\text{AppellF1}\Big[1+m,\,m+n,\,1-n,\,2+m,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\,\frac{f\,(a+b\,x)}{-b\,e+a\,f}\Big]+\Big(a+b\,x\Big)\,\Bigg(-\Big(b\,c-a\,d\Big)\,f\,\Big(-1+n\Big)\,\text{AppellF1}\Big[2+m,\,m+n,\,2-n,\,3+m,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\,\frac{f\,(a+b\,x)}{-b\,e+a\,f}\Big]+d\,\Big(b\,e-a\,f\Big)\,(m+n)\,\text{AppellF1}\Big[2+m,\,1+m+n,\,1-n,\,3+m,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d},\,\frac{f\,(a+b\,x)}{-b\,e+a\,f}\Big]\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 3138: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 237 leaves, 2 steps):

$$-\frac{f\,(a+b\,x)^{1+m}\,(c+d\,x)^{1-m-n}\,(e+f\,x)^{-2+n}}{(b\,e-a\,f)\,(d\,e-c\,f)\,(2-n)}-\Bigg(\Big(a\,d\,f\,(1+m)-b\,\big(d\,e\,(2-n)-c\,f\,(1-m-n)\big)\Big)\,(a+b\,x)^{1+m}\,(c+d\,x)^{-m-n}\,\left(\frac{(b\,e-a\,f)\,(c+d\,x)}{(b\,c-a\,d)\,(e+f\,x)}\right)^{m+n}(e+f\,x)^{-1+n}\,\text{Hypergeometric2F1}\Big[1+m,\,m+n,\,2+m,\,-\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,c-a\,d)\,(e+f\,x)}\Big]\Bigg)\Big/\Big((b\,e-a\,f)^2\,(d\,e-c\,f)\,(1+m)\,(2-n)\Big)$$

Result (type 5, 5197 leaves):

$$\Bigg((a+b\,x)^{1+2\,m}\,(c+d\,x)^{-2\,m-2\,n}\,\left(\frac{-b\,c-b\,d\,x}{-b\,c+a\,d}\right)^{m+n}(e+f\,x)^{-6+2\,n}\,\left(\frac{-b\,e-b\,f\,x}{-b\,e+a\,f}\right)^{3-n}\left(1-\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right)^{-m-n}\left(1-\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right)^{-2+n}\,\text{Gamma}[2+m]\,\Bigg(\frac{2\,\text{Hypergeometric2F1}\Big[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]}{\text{Gamma}[3+m]}+\frac{m\,\text{Hypergeometric2F1}\Big[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]}{\text{Gamma}[3+m]}+\frac{f\,(a+b\,x)\,\text{Hypergeometric2F1}\Big[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]}{(b\,e-a\,f)\,\text{Gamma}[3+m]}+\Bigg((d\,e-c\,f)\,(a+b\,x)\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\Big[2,\,1+m+n,\,4+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]\Bigg)\Big/\Big((b\,e-a\,f)\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\Big)-$$

$$\left(f\,(-d\,e+c\,f)\,(a+b\,x)^2\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\left[2,1+m+n,4+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)^2\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)\Bigg)\Bigg)\Big/$$

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

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

$$\text{Gamma}[2+m]\,\Bigg(\frac{2\,\text{Hypergeometric2F1}\left[1,m+n,3+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{\text{Gamma}[3+m]}+$$

$$\frac{m\,\text{Hypergeometric2F1}\left[1,m+n,3+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{\text{Gamma}[3+m]}+$$

$$\left(f\,(a+b\,x)\,\text{Hypergeometric2F1}\left[1,m+n,3+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\Big((b\,e-a\,f)$$

$$\text{Gamma}[3+m]\Big)+\Bigg((d\,e-c\,f)\,(a+b\,x)\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\Big[2,1+m+n,$$

$$4+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]\Bigg)\Big/\left((b\,e-a\,f)\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)-$$

$$\Bigg(f\,(-d\,e+c\,f)\,(a+b\,x)^2\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\Big[2,1+m+n,4+m,$$

$$\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]\Bigg)\Big/\left((b\,e-a\,f)^2\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)\Bigg)-$$

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

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

$$\text{Gamma}[2+m]\,\Bigg(\frac{2\,\text{Hypergeometric2F1}\left[1,m+n,3+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{\text{Gamma}[3+m]}+$$

$$\frac{m\,\text{Hypergeometric2F1}\left[1,m+n,3+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{\text{Gamma}[3+m]}+$$

$$\frac{f\,(a+b\,x)\,\text{Hypergeometric2F1}\left[1,m+n,3+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{(b\,e-a\,f)\,\text{Gamma}[3+m]}+$$

$$\Bigg((d\,e-c\,f)\,(a+b\,x)\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\Big[2,1+m+n,4+m,$$

$$\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]\Big) \Big/ \left((b\,e-a\,f)\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right) -$$

$$\Bigg(f\,(-d\,e+c\,f)\,(a+b\,x)^2\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\Big[2,\,1+m+n,\,4+m,$$

$$\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]\Big) \Big/ \left((b\,e-a\,f)^2\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)\Bigg) -$$

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

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

$$\text{Gamma}[2+m]\,\Bigg(\frac{2\,\text{Hypergeometric2F1}\Big[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]}{\text{Gamma}[3+m]}+$$

$$\frac{m\,\text{Hypergeometric2F1}\Big[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]}{\text{Gamma}[3+m]}+$$

$$\frac{f\,(a+b\,x)\,\text{Hypergeometric2F1}\Big[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]}{(b\,e-a\,f)\,\text{Gamma}[3+m]}+$$

$$\Big((d\,e-c\,f)\,(a+b\,x)\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\Big[2,\,1+m+n,\,4+m,$$

$$\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]\Big) \Big/ \left((b\,e-a\,f)\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right) -$$

$$\Big(f\,(-d\,e+c\,f)\,(a+b\,x)^2\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\Big[2,\,1+m+n,\,4+m,$$

$$\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]\Big) \Big/ \left((b\,e-a\,f)^2\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)\Bigg) +$$

$$\frac{1}{b\,(1+m)}\,f\,(-3+n)\,(a+b\,x)^{1+m}\,(c+d\,x)^{-m-n}\left(\frac{-b\,c-b\,d\,x}{-b\,c+a\,d}\right)^{m+n}(e+f\,x)^{-4+n}$$

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

$$\text{Gamma}[2+m]\,\Bigg(\frac{2\,\text{Hypergeometric2F1}\Big[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]}{\text{Gamma}[3+m]}+$$

$$\frac{m\,\text{Hypergeometric2F1}\Big[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]}{\text{Gamma}[3+m]}+$$

$$\frac{f\,(a+b\,x)\,\text{Hypergeometric2F1}\Big[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\Big]}{(b\,e-a\,f)\,\text{Gamma}[3+m]}+$$

$$\Big((d\,e-c\,f)\,(a+b\,x)\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\Big[2,\,1+m+n,\,4+m,$$

$$\left.\left.\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)-$$

$$\left(f\,(-d\,e+c\,f)\,(a+b\,x)^2\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\left[2,\,1+m+n,\,4+m,\right.\right.$$

$$\left.\left.\left.\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)^2\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)\right)-$$

$$\frac{1}{(-b\,c+a\,d)\,(1+m)}\,d\,(m+n)\,(a+b\,x)^{1+m}\,(c+d\,x)^{-m-n}\left(\frac{-b\,c-b\,d\,x}{-b\,c+a\,d}\right)^{-1+m+n}$$

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

$$\text{Gamma}[2+m]\left(\frac{2\,\text{Hypergeometric2F1}\left[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{\text{Gamma}[3+m]}+\right.$$

$$\frac{m\,\text{Hypergeometric2F1}\left[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{\text{Gamma}[3+m]}+$$

$$\frac{f\,(a+b\,x)\,\text{Hypergeometric2F1}\left[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{(b\,e-a\,f)\,\text{Gamma}[3+m]}+$$

$$\left((d\,e-c\,f)\,(a+b\,x)\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\left[2,\,1+m+n,\,4+m,\right.\right.$$

$$\left.\left.\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)-$$

$$\left(f\,(-d\,e+c\,f)\,(a+b\,x)^2\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\left[2,\,1+m+n,\,4+m,\right.\right.$$

$$\left.\left.\left.\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)^2\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)\right)+$$

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

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

$$\text{Gamma}[2+m]\left(\frac{2\,\text{Hypergeometric2F1}\left[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{\text{Gamma}[3+m]}+\right.$$

$$\frac{m\,\text{Hypergeometric2F1}\left[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{\text{Gamma}[3+m]}+$$

$$\frac{f\,(a+b\,x)\,\text{Hypergeometric2F1}\left[1,\,m+n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{(b\,e-a\,f)\,\text{Gamma}[3+m]}+$$

$$\left((d e-c f)(a+b x)\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\left[2,1+m+n,4+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\right)\Big/\left((b e-a f)(c+d x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)-$$

$$\left(f(-d e+c f)(a+b x)^2\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\left[2,1+m+n,4+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\right)\Big/\left((b e-a f)^2(c+d x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)\Bigg)+$$

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

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

$$\Bigg(\frac{2\,\text{Hypergeometric2F1}\left[1,m+n,3+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]}{\text{Gamma}[3+m]}+$$

$$\frac{m\,\text{Hypergeometric2F1}\left[1,m+n,3+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]}{\text{Gamma}[3+m]}+$$

$$\frac{f(a+b x)\,\text{Hypergeometric2F1}\left[1,m+n,3+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]}{(b e-a f)\,\text{Gamma}[3+m]}+$$

$$\left((d e-c f)(a+b x)\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\left[2,1+m+n,4+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\right)\Big/\left((b e-a f)(c+d x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)-$$

$$\left(f(-d e+c f)(a+b x)^2\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\left[2,1+m+n,4+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\right)\Big/\left((b e-a f)^2(c+d x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)\Bigg)+$$

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

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

$$\Bigg(\frac{b f\,\text{Hypergeometric2F1}\left[1,m+n,3+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]}{(b e-a f)\,\text{Gamma}[3+m]}+$$

$$\left(2(m+n)\left(-\frac{d(d e-c f)(a+b x)}{(b e-a f)(c+d x)^2}+\frac{b(d e-c f)}{(b e-a f)(c+d x)}\right)\text{Hypergeometric2F1}\left[2,1+m+n,4+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\right)\Big/\left((3+m)\,\text{Gamma}[3+m]\right)+$$

$$\left(m\,(m+n)\left(-\frac{d\,(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)^2}+\frac{b\,(d\,e-c\,f)}{(b\,e-a\,f)\,(c+d\,x)}\right)\text{Hypergeometric2F1}\left[2,\,1+m+n,\,4+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((3+m)\,\text{Gamma}[3+m]\right)+$$

$$\left(f\,(m+n)\,(a+b\,x)\left(-\frac{d\,(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)^2}+\frac{b\,(d\,e-c\,f)}{(b\,e-a\,f)\,(c+d\,x)}\right)\text{Hypergeometric2F1}\left[2,\,1+m+n,\,4+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)\,(3+m)\,\text{Gamma}[3+m]\right)-$$

$$\left(d\,(d\,e-c\,f)\,(a+b\,x)\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\left[2,\,1+m+n,\,4+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)\,(c+d\,x)^2\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)+$$

$$\left(d\,f\,(-d\,e+c\,f)\,(a+b\,x)^2\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\left[2,\,1+m+n,\,4+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)^2\,(c+d\,x)^2\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)+$$

$$\left(b\,(d\,e-c\,f)\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\left[2,\,1+m+n,\,4+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)-$$

$$\left(2\,b\,f\,(-d\,e+c\,f)\,(a+b\,x)\,\text{Gamma}[1+m+n]\,\text{Hypergeometric2F1}\left[2,\,1+m+n,\,4+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)^2\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[m+n]\right)+$$

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

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

Problem 3139: Attempted integration timed out after 120 seconds.

$$\int (a+b x)^m (c+d x)^{-m-n} (e+f x)^{-4+n} \, dx$$

Optimal (type 5, 428 leaves, 4 steps):

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

Result (type 1, 1 leaves):

???

Problem 3140: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a+b x)^m (c+d x)^n \left(\frac{b c f+a d f+a d f m+b c f n}{b d (2+m+n)}+f x\right)^{-3-m-n} dx$$

Optimal (type 3, 88 leaves, 1 step):

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

Result (type 5, 5681 leaves):

$$\left((a+b x)^{1+2 m} (c+d x)^{2 n} \left(\frac{-b c-b d x}{-b c+a d}\right)^{-n} \left(-\frac{-b c-a d-a d m-b c n-2 b d x-b d m x-b d n x}{(b c-a d) (1+n)}\right)^{3+m+n} (b c+a d+a d m+b c n+2 b d x+b d m x+b d n x)^{-3-m-n} \left(\frac{f (a d (1+m)+b c (1+n)+b d (2+m+n) x)}{b d (2+m+n)}\right)^{-3-m-n} \left(1-\frac{d (a+b x)}{-b c+a d}\right)^n \left(1+\frac{d (2+m+n) (a+b x)}{(b c-a d) (1+n)}\right)^{-2-m-n} \text{Gamma}[2+m] \left(\frac{2 \text{Hypergeometric2F1}\left[1, -n, 3+m, -\frac{d (1+m) (a+b x)}{b (1+n) (c+d x)}\right]}{\text{Gamma}[3+m]}+\right.\right.$$

$$\frac{m\,\text{Hypergeometric2F1}\left[1,-n,3+m,-\frac{d(1+m)(a+b x)}{b(1+n)(c+d x)}\right]}{\text{Gamma}[3+m]}+$$

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

$$\left((b c-a d)(1+n)\,\text{Gamma}[3+m]\right)-$$

$$\left(d(1+m)(a+b x)\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,-\frac{d(1+m)(a+b x)}{b(1+n)(c+d x)}\right]\right)\Big/$$

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

$$\left.\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,-\frac{d(1+m)(a+b x)}{b(1+n)(c+d x)}\right]\right)\Big/$$

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

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

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

$$(b c+a d+a d m+b c n+2 b d x+b d m x+b d n x)^{-3-m-n}$$

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

$$\left(\frac{2\,\text{Hypergeometric2F1}\left[1,-n,3+m,-\frac{d(1+m)(a+b x)}{b(1+n)(c+d x)}\right]}{\text{Gamma}[3+m]}+\right.$$

$$\frac{m\,\text{Hypergeometric2F1}\left[1,-n,3+m,-\frac{d(1+m)(a+b x)}{b(1+n)(c+d x)}\right]}{\text{Gamma}[3+m]}+$$

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

$$\left((b c-a d)(1+n)\,\text{Gamma}[3+m]\right)-\left(d(1+m)(a+b x)\,\text{Gamma}[1-n]\right.$$

$$\left.\text{Hypergeometric2F1}\left[2,1-n,4+m,-\frac{d(1+m)(a+b x)}{b(1+n)(c+d x)}\right]\right)\Big/$$

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

$$\left.\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,-\frac{d(1+m)(a+b x)}{b(1+n)(c+d x)}\right]\right)\Big/$$

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

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

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

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

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

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

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

$$\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\Big[2,1-n,4+m,-\frac{d\,(1+m)\,(a+b\,x)}{b\,(1+n)\,(c+d\,x)}\Big]\Bigg)\Big/$$

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

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

$$(b\,c+a\,d+a\,d\,m+b\,c\,n+2\,b\,d\,x+b\,d\,m\,x+b\,d\,n\,x)^{-3-m-n}$$

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

$$\Bigg(\frac{2\,\text{Hypergeometric2F1}\Big[1,-n,3+m,-\frac{d\,(1+m)\,(a+b\,x)}{b\,(1+n)\,(c+d\,x)}\Big]}{\text{Gamma}[3+m]}+$$

$$\frac{m\,\text{Hypergeometric2F1}\Big[1,-n,3+m,-\frac{d\,(1+m)\,(a+b\,x)}{b\,(1+n)\,(c+d\,x)}\Big]}{\text{Gamma}[3+m]}+$$

$$\Bigg(d\,(2+m+n)\,(a+b\,x)\,\text{Hypergeometric2F1}\Big[1,-n,3+m,-\frac{d\,(1+m)\,(a+b\,x)}{b\,(1+n)\,(c+d\,x)}\Big]\Bigg)\Big/$$

$$\left((b\,c-a\,d)\,(1+n)\,\text{Gamma}[3+m]\right)-\Bigg(d\,(1+m)\,(a+b\,x)\,\text{Gamma}[1-n]$$

$$\text{Hypergeometric2F1}\Big[2,1-n,4+m,-\frac{d\,(1+m)\,(a+b\,x)}{b\,(1+n)\,(c+d\,x)}\Big]\Bigg)\Big/$$

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

$$\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\Big[2,1-n,4+m,-\frac{d\,(1+m)\,(a+b\,x)}{b\,(1+n)\,(c+d\,x)}\Big]\Bigg)\Big/$$

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

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

$$(b\,c+a\,d+a\,d\,m+b\,c\,n+2\,b\,d\,x+b\,d\,m\,x+b\,d\,n\,x)^{-3-m-n}$$

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

$$\Bigg(\Bigg(b\,d\,(2+m+n)\,\text{Hypergeometric2F1}\Big[1,-n,3+m,-\frac{d\,(1+m)\,(a+b\,x)}{b\,(1+n)\,(c+d\,x)}\Big]\Bigg)\Big/$$

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

$$\text{Hypergeometric2F1}\left[2,\,1-n,\,4+m,\,-\frac{d\,(1+m)\,(a+b\,x)}{b\,(1+n)\,(c+d\,x)}\right]\Bigg)\Big/\left((3+m)\,\text{Gamma}[3+m]\right)-$$

$$\left(m\,n\left(\frac{d^2\,(1+m)\,(a+b\,x)}{b\,(1+n)\,(c+d\,x)^2}-\frac{d\,(1+m)}{(1+n)\,(c+d\,x)}\right)\text{Hypergeometric2F1}\Big[2,\,1-n,\right.$$

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

$$\left(d\,n\,(2+m+n)\,(a+b\,x)\left(\frac{d^2\,(1+m)\,(a+b\,x)}{b\,(1+n)\,(c+d\,x)^2}-\frac{d\,(1+m)}{(1+n)\,(c+d\,x)}\right)\text{Hypergeometric2F1}\Big[\right.$$

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

$$\left(d^2\,(1+m)\,(a+b\,x)\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\Big[2,\,1-n,\,4+m,\right.$$

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

$$\left(d^3\,(1+m)\,(2+m+n)\,(a+b\,x)^2\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\Big[2,\,1-n,\,4+m,\right.$$

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

$$\left(d\,(1+m)\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\Big[2,\,1-n,\,4+m,\,-\frac{d\,(1+m)\,(a+b\,x)}{b\,(1+n)\,(c+d\,x)}\Big]\right)\Big/$$

$$\left((1+n)\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)-$$

$$\left(2\,d^2\,(1+m)\,(2+m+n)\,(a+b\,x)\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\Big[2,\,1-n,\,4+m,\right.$$

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

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

$$\left.\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\Big[3,\,2-n,\,5+m,\,-\frac{d\,(1+m)\,(a+b\,x)}{b\,(1+n)\,(c+d\,x)}\Big]\right)\Big/$$

$$\left(b\,(4+m)\,(1+n)\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)-$$

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

$$\left.\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\Big[3,\,2-n,\,5+m,\,-\frac{d\,(1+m)\,(a+b\,x)}{b\,(1+n)\,(c+d\,x)}\Big]\right)\Big/$$

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

Problem 3141: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 101 leaves, 1 step):

$$\frac{b (a+b x)^{1+m} (c+d x)^{-\frac{d (b e-a f) (1+m)}{b (d e-c f)}} (e+f x)^{\frac{(b c-a d) f (1+m)}{b (d e-c f)}}}{(b c-a d) (b e-a f) (1+m)}$$

Result (type 6, 1616 leaves):

$$\frac{1}{1+m} (a+b x)^{1+m} (c+d x)^{-\frac{d (b e-a f) (1+m)}{b (d e-c f)}} (e+f x)^{\frac{(b c-a d) f (1+m)}{b (d e-c f)}}$$

$$\Bigg(\Bigg(f \, \text{AppellF1}\Big[1+m, \frac{d (b e-a f) (1+m)}{b (d e-c f)}, 1+\frac{(b c-a d) f (1+m)}{b (-d e+c f)}, 2+m, \frac{d (a+b x)}{-b c+a d},$$

$$\frac{f (a+b x)}{-b e+a f}\Big]\Bigg) \Big/ \Bigg((-d e+c f) \Bigg(\frac{1}{1+m} f \left(1+\frac{(b c-a d) f (1+m)}{b (-d e+c f)}\right) (a+b x) \, \text{AppellF1}\Big[1+m,$$

$$\frac{d (b e-a f) (1+m)}{b (d e-c f)}, 1+\frac{(b c-a d) f (1+m)}{b (-d e+c f)}, 2+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\Big] +$$

$$\Big(f (-b d e-a d f (1+m)+b c f (2+m)) (a+b x) \, \text{AppellF1}\Big[1+m, \frac{d (b e-a f) (1+m)}{b (d e-c f)},$$

$$1+\frac{(b c-a d) f (1+m)}{b (-d e+c f)}, 2+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\Big]\Big) \Big/ (b (d e-c f) (1+m)) +$$

$$b (e+f x) \, \text{AppellF1}\Big[1+m, \frac{d (b e-a f) (1+m)}{b (d e-c f)}, 1+\frac{(b c-a d) f (1+m)}{b (-d e+c f)},$$

$$2+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\Big] + \Big((a+b x) (e+f x)$$

$$\Big(f (b d e+a d f (1+m)-b c f (2+m)) \, \text{AppellF1}\Big[2+m, \frac{d (b e-a f) (1+m)}{b (d e-c f)},$$

$$2+\frac{(b c-a d) f (1+m)}{b (-d e+c f)}, 3+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\Big] + \frac{1}{b c-a d} d^2 (b e-a f)^2$$

$$(1+m) \, \text{AppellF1}\Big[2+m, 1+\frac{d (b e-a f) (1+m)}{b (d e-c f)}, 1+\frac{(b c-a d) f (1+m)}{b (-d e+c f)},$$

$$3+m, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\Big]\Big)\Big) \Big/ ((b e-a f) (-d e+c f) (2+m))\Bigg)\Bigg) +$$

$$\Bigg(d \, \text{AppellF1}\Big[1+m, 1+\frac{d (b e-a f) (1+m)}{b (d e-c f)}, \frac{(b c-a d) f (1+m)}{b (-d e+c f)}, 2+m,$$

$$\frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\Big]\Bigg) \Big/$$

$$\left((d e-c f)\left(\frac{1}{1+m}d\left(1+\frac{d (b e-a f) (1+m)}{b (d e-c f)}\right)(a+b x)\,\text{AppellF1}\left[1+m,\right.\right.\right.$$
$$1+\frac{d (b e-a f) (1+m)}{b (d e-c f)},\ \frac{(b c-a d) f (1+m)}{b (-d e+c f)},\ 2+m,\ \frac{d (a+b x)}{-b c+a d},\ \frac{f (a+b x)}{-b e+a f}\Big]-$$
$$\Big(d (-b c f-a d f (1+m)+b d e (2+m))\ (a+b x)\,\text{AppellF1}\Big[1+m,\ 1+\frac{d (b e-a f) (1+m)}{b (d e-c f)},$$
$$\frac{(b c-a d) f (1+m)}{b (-d e+c f)},\ 2+m,\ \frac{d (a+b x)}{-b c+a d},\ \frac{f (a+b x)}{-b e+a f}\Big]\Big)\Big/\ (b (d e-c f) (1+m))+$$
$$b (c+d x)\,\text{AppellF1}\Big[1+m,\ 1+\frac{d (b e-a f) (1+m)}{b (d e-c f)},\ \frac{(b c-a d) f (1+m)}{b (-d e+c f)},$$
$$2+m,\ \frac{d (a+b x)}{-b c+a d},\ \frac{f (a+b x)}{-b e+a f}\Big]+\Big((a+b x)\ (c+d x)$$
$$\Big(\frac{1}{b e-a f}(b c-a d)^2 f^2 (1+m)\,\text{AppellF1}\Big[2+m,\ 1+\frac{d (b e-a f) (1+m)}{b (d e-c f)},\ 1+$$
$$\frac{(b c-a d) f (1+m)}{b (-d e+c f)},\ 3+m,\ \frac{d (a+b x)}{-b c+a d},\ \frac{f (a+b x)}{-b e+a f}\Big]-d (-b c f-a d f (1+m)+$$
$$b d e (2+m))\,\text{AppellF1}\Big[2+m,\ 2+\frac{d (b e-a f) (1+m)}{b (d e-c f)},\ \frac{(b c-a d) f (1+m)}{b (-d e+c f)},$$
$$\left.\left.\left.3+m,\ \frac{d (a+b x)}{-b c+a d},\ \frac{f (a+b x)}{-b e+a f}\Big]\Big)\Big)\Big/\ ((b c-a d)\ (d e-c f)\ (2+m))\right)\right)\right)$$

Problem 3142: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 129 leaves, 3 steps):

$$\frac{1}{b (1+m)}(a+b x)^{1+m} (c+d x)^n \left(\frac{b (c+d x)}{b c-a d}\right)^{-n} (e+f x)^{-m-n}$$
$$\left(\frac{b (e+f x)}{b e-a f}\right)^{m+n}\text{AppellF1}\left[1+m,\ -n,\ m+n,\ 2+m,\ -\frac{d (a+b x)}{b c-a d},\ -\frac{f (a+b x)}{b e-a f}\right]$$

Result (type 6, 303 leaves):

$$\left((b c-a d) (b e-a f) (2+m) (a+b x)^{1+m} (c+d x)^n (e+f x)^{-m-n} \text{AppellF1}\left[1+m,-n,m+n,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\Big/\left(b (1+m) \left((b c-a d) (b e-a f) (2+m) \text{AppellF1}\left[1+m,-n,m+n,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]-(a+b x) \left(d (-b e+a f) n \text{AppellF1}\left[2+m,1-n,m+n,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]+(b c-a d) f (m+n) \text{AppellF1}\left[2+m,-n,1+m+n,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3143: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^m (c+d x)^n (e+f x)^{-1-m-n} \, dx$$

Optimal (type 6, 137 leaves, 3 steps):

$$\left((a+b x)^{1+m} (c+d x)^n \left(\frac{b (c+d x)}{b c-a d}\right)^{-n} (e+f x)^{-m-n} \left(\frac{b (e+f x)}{b e-a f}\right)^{m+n} \text{AppellF1}\left[1+m,-n,1+m+n,2+m,-\frac{d (a+b x)}{b c-a d},-\frac{f (a+b x)}{b e-a f}\right]\right)\Big/\left((b e-a f) (1+m)\right)$$

Result (type 6, 308 leaves):

$$\left((b c-a d) (b e-a f) (2+m) (a+b x)^{1+m} (c+d x)^n (e+f x)^{-1-m-n} \text{AppellF1}\left[1+m,-n,1+m+n,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\Big/\left(b (1+m) \left((b c-a d) (b e-a f) (2+m) \text{AppellF1}\left[1+m,-n,1+m+n,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]-(a+b x) \left(d (-b e+a f) n \text{AppellF1}\left[2+m,1-n,1+m+n,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]+(b c-a d) f (1+m+n) \text{AppellF1}\left[2+m,-n,2+m+n,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3145: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 227 leaves, 2 steps):

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

Result (type 5, 5212 leaves) :

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

$$\left(b\,(1+m)\left(-\frac{1}{(-b\,e+a\,f)\,(1+m)}f\,(-2-m-n)\,(a+b\,x)^{1+m}\,(c+d\,x)^{n}\left(\frac{-b\,c-b\,d\,x}{-b\,c+a\,d}\right)^{-n}(e+f\,x)^{-3-m-n}\left(\frac{-b\,e-b\,f\,x}{-b\,e+a\,f}\right)^{3+m+n}\left(1-\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right)^{n}\left(1-\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right)^{-3-m-n}\text{Gamma}[2+m]\left(\frac{2\,\text{Hypergeometric2F1}\left[1,\,-n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{\text{Gamma}[3+m]}+\frac{m\,\text{Hypergeometric2F1}\left[1,\,-n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{\text{Gamma}[3+m]}+\frac{f\,(a+b\,x)\,\text{Hypergeometric2F1}\left[1,\,-n,\,3+m,\,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{(b\,e-a\,f)\,\text{Gamma}[3+m]}+\right.\right.$$

$$\left((d e-c f)(a+b x)\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\right)\Big/\left((b e-a f)(c+d x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)-$$

$$\left(f(-d e+c f)(a+b x)^2\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\right)\Big/\left((b e-a f)^2(c+d x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)\Bigg)-$$

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

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

$$\text{Gamma}[2+m]\left(\frac{2\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]}{\text{Gamma}[3+m]}+\right.$$

$$\frac{m\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]}{\text{Gamma}[3+m]}+$$

$$\frac{f(a+b x)\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]}{(b e-a f)\,\text{Gamma}[3+m]}+$$

$$\left((d e-c f)(a+b x)\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\right)\Big/\left((b e-a f)(c+d x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)-$$

$$\left(f(-d e+c f)(a+b x)^2\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\right)\Big/\left((b e-a f)^2(c+d x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)\Bigg)-$$

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

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

$$\text{Gamma}[2+m]\left(\frac{2\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]}{\text{Gamma}[3+m]}+\right.$$

$$\frac{m\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]}{\text{Gamma}[3+m]}+$$

$$\frac{f(a+b x)\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]}{(b e-a f)\,\text{Gamma}[3+m]}+$$

$$\left((d e-c f)\,(a+b x)\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]\right)\Big/\left((b e-a f)\,(c+d x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)-$$

$$\left(f\,(-d e+c f)\,(a+b x)^2\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]\right)\Big/\left((b e-a f)^2\,(c+d x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)\Bigg)+$$

$$\frac{1}{b\,(1+m)}f\,(-3-m-n)\,(a+b x)^{1+m}\,(c+d x)^n\left(\frac{-b c-b d x}{-b c+a d}\right)^{-n}(e+f x)^{-4-m-n}$$

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

$$\text{Gamma}[2+m]\left(\frac{2\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]}{\text{Gamma}[3+m]}+\right.$$

$$\frac{m\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]}{\text{Gamma}[3+m]}+$$

$$\frac{f\,(a+b x)\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]}{(b e-a f)\,\text{Gamma}[3+m]}+$$

$$\left((d e-c f)\,(a+b x)\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]\right)\Big/\left((b e-a f)\,(c+d x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)-$$

$$\left(f\,(-d e+c f)\,(a+b x)^2\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]\right)\Big/\left((b e-a f)^2\,(c+d x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)\Bigg)+$$

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

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

$$\text{Gamma}[2+m]\left(\frac{2\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]}{\text{Gamma}[3+m]}+\right.$$

$$\frac{m\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d e-c f)\,(a+b x)}{(b e-a f)\,(c+d x)}\right]}{\text{Gamma}[3+m]}+$$

$$\frac{f\,(a+b\,x)\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{(b\,e-a\,f)\,\text{Gamma}[3+m]}+$$

$$\left((d\,e-c\,f)\,(a+b\,x)\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)-$$

$$\left.\left(f\,(-d\,e+c\,f)\,(a+b\,x)^2\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)^2\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)\right)+$$

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

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

$$\left(\frac{2\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{\text{Gamma}[3+m]}+\right.$$

$$\frac{m\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{\text{Gamma}[3+m]}+$$

$$\frac{f\,(a+b\,x)\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{(b\,e-a\,f)\,\text{Gamma}[3+m]}+$$

$$\left((d\,e-c\,f)\,(a+b\,x)\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)-$$

$$\left.\left(f\,(-d\,e+c\,f)\,(a+b\,x)^2\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)^2\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)\right)+$$

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

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

$$\left(\frac{2\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{\text{Gamma}[3+m]}+\right.$$

$$\frac{m\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{\text{Gamma}[3+m]}+$$

$$\frac{f\,(a+b\,x)\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{(b\,e-a\,f)\,\text{Gamma}[3+m]}+$$

$$\left((d\,e-c\,f)\,(a+b\,x)\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)-$$

$$\left(f\,(-d\,e+c\,f)\,(a+b\,x)^2\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)^2\,(c+d\,x)\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)\Bigg)+$$

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

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

$$\Bigg(\frac{b\,f\,\text{Hypergeometric2F1}\left[1,-n,3+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]}{(b\,e-a\,f)\,\text{Gamma}[3+m]}-$$

$$\left(2\,n\left(-\frac{d\,(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)^2}+\frac{b\,(d\,e-c\,f)}{(b\,e-a\,f)\,(c+d\,x)}\right)\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((3+m)\,\text{Gamma}[3+m]\right)-$$

$$\left(m\,n\left(-\frac{d\,(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)^2}+\frac{b\,(d\,e-c\,f)}{(b\,e-a\,f)\,(c+d\,x)}\right)\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((3+m)\,\text{Gamma}[3+m]\right)-$$

$$\left(f\,n\,(a+b\,x)\left(-\frac{d\,(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)^2}+\frac{b\,(d\,e-c\,f)}{(b\,e-a\,f)\,(c+d\,x)}\right)\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)\,(3+m)\,\text{Gamma}[3+m]\right)-$$

$$\left(d\,(d\,e-c\,f)\,(a+b\,x)\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)\,(c+d\,x)^2\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)+$$

$$\left(d\,f\,(-d\,e+c\,f)\,(a+b\,x)^2\,\text{Gamma}[1-n]\,\text{Hypergeometric2F1}\left[2,1-n,4+m,\frac{(d\,e-c\,f)\,(a+b\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\Big/\left((b\,e-a\,f)^2\,(c+d\,x)^2\,\text{Gamma}[4+m]\,\text{Gamma}[-n]\right)+$$

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

Problem 3146: Attempted integration timed out after 120 seconds.

$$\int (a+b\,x)^m\,(c+d\,x)^n\,(e+f\,x)^{-4-m-n}\,dx$$

Optimal (type 5, 402 leaves, 4 steps):

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

Result (type 1, 1 leaves):

???

Problem 3147: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^m (c+d x)^n (e+f x)^p \, dx$$

Optimal (type 6, 123 leaves, 3 steps):

$$\frac{1}{b (1+m)} (a+b x)^{1+m} (c+d x)^n \left(\frac{b (c+d x)}{b c-a d}\right)^{-n} (e+f x)^p \left(\frac{b (e+f x)}{b e-a f}\right)^{-p} \text{AppellF1}\left[1+m,-n,-p,2+m,-\frac{d (a+b x)}{b c-a d},-\frac{f (a+b x)}{b e-a f}\right]$$

Result (type 6, 296 leaves):

$$\left((b c-a d) (b e-a f) (2+m) (a+b x)^{1+m} (c+d x)^n (e+f x)^p \text{AppellF1}\left[1+m,-n,-p,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right) \Big/ \left(b (1+m) \left((b c-a d) (b e-a f) (2+m) \text{AppellF1}\left[1+m,-n,-p,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]-(a+b x) \left(d (-b e+a f) n \text{AppellF1}\left[2+m,1-n,-p,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]+(-b c+a d) f p \text{AppellF1}\left[2+m,-n,1-p,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3148: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 259 leaves, 4 steps):

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

Result (type 6, 330 leaves):

$$\frac{1}{3}(a+bx)^m(c+dx)^n\left(\left(9\,a\,c\,e\,f\,x^2\,\text{AppellF1}\left[2,-m,-n,3,-\frac{bx}{a},-\frac{dx}{c}\right]\right)\Big/\left(3\,a\,c\,\text{AppellF1}\left[2,-m,-n,3,-\frac{bx}{a},-\frac{dx}{c}\right]+b\,c\,m\,x\,\text{AppellF1}\left[3,1-m,-n,4,-\frac{bx}{a},-\frac{dx}{c}\right]+a\,d\,n\,x\,\text{AppellF1}\left[3,-m,1-n,4,-\frac{bx}{a},-\frac{dx}{c}\right]\right)+\left(4\,a\,c\,f^2\,x^3\,\text{AppellF1}\left[3,-m,-n,4,-\frac{bx}{a},-\frac{dx}{c}\right]\right)\Big/\left(4\,a\,c\,\text{AppellF1}\left[3,-m,-n,4,-\frac{bx}{a},-\frac{dx}{c}\right]+b\,c\,m\,x\,\text{AppellF1}\left[4,1-m,-n,5,-\frac{bx}{a},-\frac{dx}{c}\right]+a\,d\,n\,x\,\text{AppellF1}\left[4,-m,1-n,5,-\frac{bx}{a},-\frac{dx}{c}\right]\right)+\frac{1}{d(1+n)}3\,e^2\left(\frac{d(a+bx)}{-bc+ad}\right)^{-m}(c+dx)\,\text{Hypergeometric2F1}\left[-m,1+n,2+n,\frac{b(c+dx)}{bc-ad}\right]\right)$$

Problem 3149: Result unnecessarily involves higher level functions.

$$\int(a+bx)^m(c+dx)^n(e+fx)\,dx$$

Optimal (type 5, 131 leaves, 3 steps):

$$\frac{f(a+bx)^{1+m}(c+dx)^{1+n}}{b\,d\,(2+m+n)}-\left((b\,d\,e\,(2+m+n)-f\,(b\,c\,(1+m)+a\,d\,(1+n)))\,(a+bx)^{1+m}(c+dx)^{1+n}\,\text{Hypergeometric2F1}\left[1,2+m+n,2+n,\frac{b(c+dx)}{bc-ad}\right]\right)\Big/\left(b\,d\,(bc-ad)\,(1+n)\,(2+m+n)\right)$$

Result (type 6, 202 leaves):

$$(a+bx)^m(c+dx)^n\left(\left(3\,a\,c\,f\,x^2\,\text{AppellF1}\left[2,-m,-n,3,-\frac{bx}{a},-\frac{dx}{c}\right]\right)\Big/\left(6\,a\,c\,\text{AppellF1}\left[2,-m,-n,3,-\frac{bx}{a},-\frac{dx}{c}\right]+2\,b\,c\,m\,x\,\text{AppellF1}\left[3,1-m,-n,4,-\frac{bx}{a},-\frac{dx}{c}\right]+2\,a\,d\,n\,x\,\text{AppellF1}\left[3,-m,1-n,4,-\frac{bx}{a},-\frac{dx}{c}\right]\right)+\frac{1}{d(1+n)}e\left(\frac{d(a+bx)}{-bc+ad}\right)^{-m}(c+dx)\,\text{Hypergeometric2F1}\left[-m,1+n,2+n,\frac{b(c+dx)}{bc-ad}\right]\right)$$

Problem 3151: Result more than twice size of optimal antiderivative.

$$\int\frac{(a+bx)^m(c+dx)^n}{e+fx}\,dx$$

Optimal (type 6, 100 leaves, 2 steps):

$$\left((a+b x)^{1+m} (c+d x)^n \left(\frac{b (c+d x)}{b c-a d}\right)^{-n} \text{AppellF1}\left[1+m,-n,1,2+m,-\frac{d (a+b x)}{b c-a d},-\frac{f (a+b x)}{b e-a f}\right]\right)\Big/ \left((b e-a f) (1+m)\right)$$

Result (type 6, 298 leaves):

$$-\left(\left((b c-a d) (b e-a f)^2 (2+m) (a+b x)^{1+m} (c+d x)^n \text{AppellF1}\left[1+m,-n,1,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\Big/ \left(b (-b e+a f) (1+m) (e+f x) \left((b c-a d) (b e-a f) (2+m) \text{AppellF1}\left[1+m,-n,1,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]-(a+b x) \left(d (-b e+a f) n \text{AppellF1}\left[2+m,1-n,1,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]+(b c-a d) f \text{AppellF1}\left[2+m,-n,2,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)\right)$$

Problem 3152: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 101 leaves, 2 steps):

$$\left(b (a+b x)^{1+m} (c+d x)^n \left(\frac{b (c+d x)}{b c-a d}\right)^{-n} \text{AppellF1}\left[1+m,-n,2,2+m,-\frac{d (a+b x)}{b c-a d},-\frac{f (a+b x)}{b e-a f}\right]\right)\Big/ \left((b e-a f)^2 (1+m)\right)$$

Result (type 6, 286 leaves):

$$\left((b c-a d) (b e-a f) (2+m) (a+b x)^{1+m} (c+d x)^n \text{AppellF1}\left[1+m,-n,2,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\Big/ \left(b (1+m) (e+f x)^2 \left((b c-a d) (b e-a f) (2+m) \text{AppellF1}\left[1+m,-n,2,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]-(a+b x) \left(d (-b e+a f) n \text{AppellF1}\left[2+m,1-n,2,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]+2 (b c-a d) f \text{AppellF1}\left[2+m,-n,3,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3153: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 103 leaves, 2 steps):

$$\left(b^2 (a+b x)^{1+m} (c+d x)^n \left(\frac{b (c+d x)}{b c-a d}\right)^{-n} \text{AppellF1}\left[1+m,-n,3,2+m,-\frac{d (a+b x)}{b c-a d},-\frac{f (a+b x)}{b e-a f}\right]\right)\Big/\left((b e-a f)^3 (1+m)\right)$$

Result (type 6, 299 leaves):

$$-\left(\left((b c-a d) (b e-a f)^4 (2+m) (a+b x)^{1+m} (c+d x)^n \text{AppellF1}\left[1+m,-n,3,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\Big/\left(b (-b e+a f)^3 (1+m) (e+f x)^3 \left((b c-a d) (b e-a f) (2+m) \text{AppellF1}\left[1+m,-n,3,2+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]-(a+b x) \left(d (-b e+a f) n \text{AppellF1}\left[2+m,1-n,3,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]+3 (b c-a d) f \text{AppellF1}\left[2+m,-n,4,3+m,\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)\right)$$

Problem 3158: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)^{4/3}}{\sqrt{c+d x} (e+f x)} \, dx$$

Optimal (type 6, 100 leaves, 2 steps):

$$\frac{3 (a+b x)^{7/3} \sqrt{\frac{b (c+d x)}{b c-a d}} \text{AppellF1}\left[\frac{7}{3},\frac{1}{2},1,\frac{10}{3},-\frac{d (a+b x)}{b c-a d},-\frac{f (a+b x)}{b e-a f}\right]}{7 (b e-a f) \sqrt{c+d x}}$$

Result (type 6, 921 leaves):

$$\frac{1}{35\, d^2\, (a+b\,x)^{2/3}}$$

$$6\,b\,\sqrt{c+d\,x}\,\left(\frac{7\,d\,(a+b\,x)}{f}+\left((c+d\,x)\,\left(-26\,(b\,c-a\,d)\,(3\,b\,d\,e+2\,b\,c\,f-5\,a\,d\,f)\,\text{AppellF1}\left[\frac{7}{6},\frac{2}{3},1,\right.\right.\right.\right.$$

$$\left.\frac{13}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]\,\left(b\,(-3\,d\,e+3\,c\,f)\,\text{AppellF1}\left[\frac{7}{6},\frac{2}{3},2,\frac{13}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\right.\right.$$

$$\left.\left.\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+2\,(b\,c-a\,d)\,f\,\text{AppellF1}\left[\frac{7}{6},\frac{5}{3},1,\frac{13}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]\right)-$$

$$7\,b\,(c+d\,x)\,\text{AppellF1}\left[\frac{1}{6},\frac{2}{3},1,\frac{7}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]\,\left(13\,f\,\left(5\,a^2\,d^2\,f+a\right.\right.$$

$$\left.b\,d\,(-3\,d\,e+42\,c\,f+49\,d\,f\,x)-b^2\,\left(12\,c^2\,f+35\,d^2\,e\,x+2\,c\,d\,(16\,e+7\,f\,x)\right)\right)$$

$$\text{AppellF1}\left[\frac{7}{6},\frac{2}{3},1,\frac{13}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+14\,(5\,b\,d\,e+2\,b\,c\,f-7\,a\,d\,f)$$

$$\left(3\,b\,(d\,e-c\,f)\,\text{AppellF1}\left[\frac{13}{6},\frac{2}{3},2,\frac{19}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+2\right.$$

$$\left.\left.\left.\left.\left.(-b\,c+a\,d)\,f\,\text{AppellF1}\left[\frac{13}{6},\frac{5}{3},1,\frac{19}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]\right)\right)\right)\right)\right)\Big/$$

$$\left(d\,(e+f\,x)\,\left(7\,b\,f\,(c+d\,x)\,\text{AppellF1}\left[\frac{1}{6},\frac{2}{3},1,\frac{7}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+\right.\right.$$

$$b\,(-6\,d\,e+6\,c\,f)\,\text{AppellF1}\left[\frac{7}{6},\frac{2}{3},2,\frac{13}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+$$

$$\left.4\,(b\,c-a\,d)\,f\,\text{AppellF1}\left[\frac{7}{6},\frac{5}{3},1,\frac{13}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]\right)$$

$$\left(13\,b\,f\,(c+d\,x)\,\text{AppellF1}\left[\frac{7}{6},\frac{2}{3},1,\frac{13}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+\right.$$

$$b\,(-6\,d\,e+6\,c\,f)\,\text{AppellF1}\left[\frac{13}{6},\frac{2}{3},2,\frac{19}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+$$

$$\left.\left.4\,(b\,c-a\,d)\,f\,\text{AppellF1}\left[\frac{13}{6},\frac{5}{3},1,\frac{19}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]\right)\right)$$

Problem 3159: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 123 leaves, 3 steps):

$$\left(2\,\sqrt{a+b\,x}\,(c+d\,x)^{2/5}\,(e+f\,x)^{3/5}\,\text{AppellF1}\left[\frac{1}{2},-\frac{2}{5},-\frac{3}{5},\frac{3}{2},-\frac{d\,(a+b\,x)}{b\,c-a\,d},-\frac{f\,(a+b\,x)}{b\,e-a\,f}\right]\right)\Big/$$

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

Result (type 6, 661 leaves):

$$\frac{1}{45\, b^3\, (c+d\,x)^{3/5}\, (e+f\,x)^{2/5}} 2\sqrt{a+b\,x} \left(15\, b^2\, (c+d\,x)\, (e+f\,x) - 2\, (a+b\,x) \left(\left(9\, \left(25\, a^2\, d^2\, f^2 - 10\, a\, b\, d\, f\, (3\, d\, e + 2\, c\, f) + b^2\, \left(3\, d^2\, e^2 + 24\, c\, d\, e\, f - 2\, c^2\, f^2\right)\right) \text{AppellF1}\left[\frac{1}{2}, \frac{3}{5}, \frac{2}{5}, \frac{3}{2}, \frac{-b\,c+a\,d}{d\,(a+b\,x)}, \frac{-b\,e+a\,f}{f\,(a+b\,x)}\right]\right) \Big/ \left(15\, d\, f\, (a+b\,x)\, \text{AppellF1}\left[\frac{1}{2}, \frac{3}{5}, \frac{2}{5}, \frac{3}{2}, \frac{-b\,c+a\,d}{d\,(a+b\,x)}, \frac{-b\,e+a\,f}{f\,(a+b\,x)}\right] + (-4\, b\, d\, e + 4\, a\, d\, f)\, \text{AppellF1}\left[\frac{3}{2}, \frac{3}{5}, \frac{7}{5}, \frac{5}{2}, \frac{-b\,c+a\,d}{d\,(a+b\,x)}, \frac{-b\,e+a\,f}{f\,(a+b\,x)}\right] + 6\, (-b\,c+a\,d)\, f\, \text{AppellF1}\left[\frac{3}{2}, \frac{8}{5}, \frac{2}{5}, \frac{5}{2}, \frac{-b\,c+a\,d}{d\,(a+b\,x)}, \frac{-b\,e+a\,f}{f\,(a+b\,x)}\right]\right) + \frac{1}{(a+b\,x)^2} (3\, b\, d\, e + 2\, b\, c\, f - 5\, a\, d\, f) \left(-\frac{3\, b^2\, (c+d\,x)\, (e+f\,x)}{d\, f} + \left(25\, (b\,c - a\,d)\, (b\,e - a\,f)\, (a+b\,x)\, \text{AppellF1}\left[\frac{3}{2}, \frac{3}{5}, \frac{2}{5}, \frac{5}{2}, \frac{-b\,c+a\,d}{d\,(a+b\,x)}, \frac{-b\,e+a\,f}{f\,(a+b\,x)}\right]\right) \Big/ \left(25\, d\, f\, (a+b\,x)\, \text{AppellF1}\left[\frac{3}{2}, \frac{3}{5}, \frac{2}{5}, \frac{5}{2}, \frac{-b\,c+a\,d}{d\,(a+b\,x)}, \frac{-b\,e+a\,f}{f\,(a+b\,x)}\right] + (-4\, b\, d\, e + 4\, a\, d\, f)\, \text{AppellF1}\left[\frac{5}{2}, \frac{3}{5}, \frac{7}{5}, \frac{7}{2}, \frac{-b\,c+a\,d}{d\,(a+b\,x)}, \frac{-b\,e+a\,f}{f\,(a+b\,x)}\right] + 6\, (-b\,c+a\,d)\, f\, \text{AppellF1}\left[\frac{5}{2}, \frac{8}{5}, \frac{2}{5}, \frac{7}{2}, \frac{-b\,c+a\,d}{d\,(a+b\,x)}, \frac{-b\,e+a\,f}{f\,(a+b\,x)}\right]\right)\right)\right)\right)$$

Problem 3160: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 123 leaves, 3 steps):

$$\frac{1}{3\, b\, \sqrt{c+d\,x}} 2\, (a+b\,x)^{3/2} \sqrt{\frac{b\, (c+d\,x)}{b\,c - a\,d}}\, (e+f\,x)^n \left(\frac{b\, (e+f\,x)}{b\,e - a\,f}\right)^{-n} \text{AppellF1}\left[\frac{3}{2}, \frac{1}{2}, -n, \frac{5}{2}, -\frac{d\, (a+b\,x)}{b\,c - a\,d}, -\frac{f\, (a+b\,x)}{b\,e - a\,f}\right]$$

Result (type 6, 289 leaves):

$$\left(10 (b c-a d) (b e-a f) (a+b x)^{3/2} (e+f x)^n \text{AppellF1}\left[\frac{3}{2},\frac{1}{2},-n,\frac{5}{2},\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\Big/ \left(3 b \sqrt{c+d x} \left(5 (b c-a d) (b e-a f) \text{AppellF1}\left[\frac{3}{2},\frac{1}{2},-n,\frac{5}{2},\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]-(a+b x) \left(2 (-b c+a d) f n \text{AppellF1}\left[\frac{5}{2},\frac{1}{2},1-n,\frac{7}{2},\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]+d (b e-a f) \text{AppellF1}\left[\frac{5}{2},\frac{3}{2},-n,\frac{7}{2},\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3161: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 121 leaves, 3 steps):

$$\frac{1}{b \sqrt{\frac{b (c+d x)}{b c-a d}}} 2 \sqrt{a+b x} \sqrt{c+d x} (e+f x)^n \left(\frac{b (e+f x)}{b e-a f}\right)^{-n} \text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-n,\frac{3}{2},-\frac{d (a+b x)}{b c-a d},-\frac{f (a+b x)}{b e-a f}\right]$$

Result (type 6, 287 leaves):

$$\left(6 (b c-a d) (b e-a f) \sqrt{a+b x} \sqrt{c+d x} (e+f x)^n \text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-n,\frac{3}{2},\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\Big/ \left(b \left(3 (b c-a d) (b e-a f) \text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-n,\frac{3}{2},\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]-(a+b x) \left(2 (-b c+a d) f n \text{AppellF1}\left[\frac{3}{2},-\frac{1}{2},1-n,\frac{5}{2},\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]+d (-b e+a f) \text{AppellF1}\left[\frac{3}{2},\frac{1}{2},-n,\frac{5}{2},\frac{d (a+b x)}{-b c+a d},\frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)$$

Problem 3162: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 128 leaves, 3 steps):

$$\left(2 \sqrt{a+b x} \sqrt{\frac{b (c+d x)}{b c-a d}} (e+f x)^n \left(\frac{b (e+f x)}{b e-a f}\right)^{-n} \text{AppellF1}\left[\frac{1}{2}, \frac{3}{2}, -n, \frac{3}{2}, -\frac{d (a+b x)}{b c-a d}, -\frac{f (a+b x)}{b e-a f}\right]\right) \Big/ \left((b c-a d) \sqrt{c+d x}\right)$$

Result (type 6, 816 leaves):

$$\frac{1}{3 (c+d x)^{3/2}} 2 (b e-a f) \sqrt{a+b x} (e+f x)^n$$
$$\left(\left(9 b (c+d x)^2 \text{AppellF1}\left[\frac{1}{2}, -\frac{1}{2}, -n, \frac{3}{2}, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]\right) \Big/\right.$$
$$\left((b c-a d) \left(3 (b c-a d) (b e-a f) \text{AppellF1}\left[\frac{1}{2}, -\frac{1}{2}, -n, \frac{3}{2}, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right] -\right.\right.$$
$$(a+b x) \left(2 (-b c+a d) f n \text{AppellF1}\left[\frac{3}{2}, -\frac{1}{2}, 1-n, \frac{5}{2}, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right] +\right.$$
$$\left.\left.\left. d (-b e+a f) \text{AppellF1}\left[\frac{3}{2}, \frac{1}{2}, -n, \frac{5}{2}, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right) -$$
$$\left(5 d (a+b x) (c+d x) \text{AppellF1}\left[\frac{3}{2}, \frac{1}{2}, -n, \frac{5}{2}, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]\right) \Big/$$
$$\left((b c-a d) \left(5 (b c-a d) (b e-a f) \text{AppellF1}\left[\frac{3}{2}, \frac{1}{2}, -n, \frac{5}{2}, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right] -\right.\right.$$
$$(a+b x) \left(2 (-b c+a d) f n \text{AppellF1}\left[\frac{5}{2}, \frac{1}{2}, 1-n, \frac{7}{2}, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right] +\right.$$
$$\left.\left.\left. d (b e-a f) \text{AppellF1}\left[\frac{5}{2}, \frac{3}{2}, -n, \frac{7}{2}, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right) -$$
$$\left(5 d (a+b x) \text{AppellF1}\left[\frac{3}{2}, \frac{3}{2}, -n, \frac{5}{2}, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]\right) \Big/$$
$$\left(b \left(5 (b c-a d) (b e-a f) \text{AppellF1}\left[\frac{3}{2}, \frac{3}{2}, -n, \frac{5}{2}, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right] -\right.\right.$$
$$(a+b x) \left(2 (-b c+a d) f n \text{AppellF1}\left[\frac{5}{2}, \frac{3}{2}, 1-n, \frac{7}{2}, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right] +\right.$$
$$\left.\left.\left.\left. 3 d (b e-a f) \text{AppellF1}\left[\frac{5}{2}, \frac{5}{2}, -n, \frac{7}{2}, \frac{d (a+b x)}{-b c+a d}, \frac{f (a+b x)}{-b e+a f}\right]\right)\right)\right)\right)$$

Problem 3163: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 121 leaves, 3 steps):

$$-\left(\left(2\sqrt{\frac{b\,(c+d\,x)}{b\,c-a\,d}}\,(e+f\,x)^n\left(\frac{b\,(e+f\,x)}{b\,e-a\,f}\right)^{-n}\text{AppellF1}\left[-\frac{1}{2},\frac{1}{2},-n,\frac{1}{2},-\frac{d\,(a+b\,x)}{b\,c-a\,d},-\frac{f\,(a+b\,x)}{b\,e-a\,f}\right]\right)\Big/\left(b\,\sqrt{a+b\,x}\,\sqrt{c+d\,x}\right)\right)$$

Result (type 6, 825 leaves):

$$\frac{1}{3\,(b\,c-a\,d)\,\sqrt{a+b\,x}\,\sqrt{c+d\,x}}\,2\,(b\,e-a\,f)\,(e+f\,x)^n$$
$$\left(\left(3\,(b\,c-a\,d)^2\,(c+d\,x)\,\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-n,\frac{1}{2},\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]\right)\Big/\right.$$
$$\left((-b\,c+a\,d)\left((b\,c-a\,d)\,(b\,e-a\,f)\,\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-n,\frac{1}{2},\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]-\right.\right.$$
$$(a+b\,x)\left(2\,(-b\,c+a\,d)\,f\,n\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},1-n,\frac{3}{2},\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]+\right.$$
$$\left.\left.\left.d\,(-b\,e+a\,f)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-n,\frac{3}{2},\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]\right)\right)\right)-$$
$$\left(9\,d\,(a+b\,x)\,(c+d\,x)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-n,\frac{3}{2},\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]\right)\Big/$$
$$\left(3\,(b\,c-a\,d)\,(b\,e-a\,f)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-n,\frac{3}{2},\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]-\right.$$
$$(a+b\,x)\left(2\,(-b\,c+a\,d)\,f\,n\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2},1-n,\frac{5}{2},\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]+\right.$$
$$\left.\left.d\,(-b\,e+a\,f)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2},-n,\frac{5}{2},\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]\right)\right)+$$
$$\left(5\,d^2\,(a+b\,x)^2\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2},-n,\frac{5}{2},\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]\right)\Big/$$
$$\left(b\left(5\,(b\,c-a\,d)\,(b\,e-a\,f)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2},-n,\frac{5}{2},\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]-\right.\right.$$
$$(a+b\,x)\left(2\,(-b\,c+a\,d)\,f\,n\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2},1-n,\frac{7}{2},\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]+\right.$$
$$\left.\left.\left.\left.d\,(b\,e-a\,f)\,\text{AppellF1}\left[\frac{5}{2},\frac{3}{2},-n,\frac{7}{2},\frac{d\,(a+b\,x)}{-b\,c+a\,d},\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]\right)\right)\right)\right)$$

Problem 3164: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 100 leaves, 2 steps):

$$\frac{2 (a+b x)^{3/2} (c+d x)^{1/3} \text{AppellF1}\left[\frac{3}{2},-\frac{1}{3},1,\frac{5}{2},-\frac{d (a+b x)}{b c-a d},-\frac{f (a+b x)}{b e-a f}\right]}{3 (b e-a f) \left(\frac{b (c+d x)}{b c-a d}\right)^{1/3}}$$

Result (type 6, 901 leaves):

$$\frac{1}{35 (c+d x)^{2/3}} 6 \sqrt{a+b x} \left(\frac{7 (c+d x)}{f}-\left(d (a+b x) \left(78 (b c-a d) (b e-a f) \text{AppellF1}\left[\frac{7}{6},\frac{2}{3},1,\frac{13}{6},\frac{-b c+a d}{d (a+b x)},\frac{-b e+a f}{f (a+b x)}\right] \left(3 d (b e-a f) \text{AppellF1}\left[\frac{7}{6},\frac{2}{3},2,\frac{13}{6},\frac{-b c+a d}{d (a+b x)},\frac{-b e+a f}{f (a+b x)}\right]+2 (b c-a d) f \text{AppellF1}\left[\frac{7}{6},\frac{5}{3},1,\frac{13}{6},\frac{-b c+a d}{d (a+b x)},\frac{-b e+a f}{f (a+b x)}\right]\right)-7 (a+b x) \text{AppellF1}\left[\frac{1}{6},\frac{2}{3},1,\frac{7}{6},\frac{-b c+a d}{d (a+b x)},\frac{-b e+a f}{f (a+b x)}\right] \left(13 d f \left(3 b^2 c e-3 a d f (6 a+7 b x)+b \left(a (32 d e-17 c f)+7 b (5 d e-2 c f) x\right)\right) \text{AppellF1}\left[\frac{7}{6},\frac{2}{3},1,\frac{13}{6},\frac{-b c+a d}{d (a+b x)},\frac{-b e+a f}{f (a+b x)}\right]-14 (5 b d e-2 b c f-3 a d f) \left(3 d (b e-a f) \text{AppellF1}\left[\frac{13}{6},\frac{2}{3},2,\frac{19}{6},\frac{-b c+a d}{d (a+b x)},\frac{-b e+a f}{f (a+b x)}\right]+2 (b c-a d) f \text{AppellF1}\left[\frac{13}{6},\frac{5}{3},1,\frac{19}{6},\frac{-b c+a d}{d (a+b x)},\frac{-b e+a f}{f (a+b x)}\right]\right)\right)\right)\bigg/ \left(b^2 (e+f x) \left(7 d f (a+b x) \text{AppellF1}\left[\frac{1}{6},\frac{2}{3},1,\frac{7}{6},\frac{-b c+a d}{d (a+b x)},\frac{-b e+a f}{f (a+b x)}\right]+(-6 b d e+6 a d f) \text{AppellF1}\left[\frac{7}{6},\frac{2}{3},2,\frac{13}{6},\frac{-b c+a d}{d (a+b x)},\frac{-b e+a f}{f (a+b x)}\right]+4 (-b c+a d) f \text{AppellF1}\left[\frac{7}{6},\frac{5}{3},1,\frac{13}{6},\frac{-b c+a d}{d (a+b x)},\frac{-b e+a f}{f (a+b x)}\right]\right) \left(13 d f (a+b x) \text{AppellF1}\left[\frac{7}{6},\frac{2}{3},1,\frac{13}{6},\frac{-b c+a d}{d (a+b x)},\frac{-b e+a f}{f (a+b x)}\right]+(-6 b d e+6 a d f) \text{AppellF1}\left[\frac{13}{6},\frac{2}{3},2,\frac{19}{6},\frac{-b c+a d}{d (a+b x)},\frac{-b e+a f}{f (a+b x)}\right]+4 (-b c+a d) f \text{AppellF1}\left[\frac{13}{6},\frac{5}{3},1,\frac{19}{6},\frac{-b c+a d}{d (a+b x)},\frac{-b e+a f}{f (a+b x)}\right]\right)\right)\right)$$

Problem 3165: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 100 leaves, 2 steps):

$$\frac{3\,(a+b\,x)^{4/3}\,\sqrt{c+d\,x}\;\text{AppellF1}\left[\frac{4}{3},-\frac{1}{2},1,\frac{7}{3},-\frac{d\,(a+b\,x)}{b\,c-a\,d},-\frac{f\,(a+b\,x)}{b\,e-a\,f}\right]}{4\,(b\,e-a\,f)\,\sqrt{\frac{b\,(c+d\,x)}{b\,c-a\,d}}}$$

Result (type 6, 895 leaves):

$$\frac{1}{35\,(a+b\,x)^{2/3}}\,6\,\sqrt{c+d\,x}\,\Bigg(\frac{7\,(a+b\,x)}{f}+\Bigg(b\,(c+d\,x)\,\Bigg(-78\,(b\,c-a\,d)\,(d\,e-c\,f)\,\text{AppellF1}\left[\frac{7}{6},\frac{2}{3},1,\frac{13}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]\Bigg/$$
$$\Bigg(b\,(-3\,d\,e+3\,c\,f)\,\text{AppellF1}\left[\frac{7}{6},\frac{2}{3},2,\frac{13}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+$$
$$2\,(b\,c-a\,d)\,f\,\text{AppellF1}\left[\frac{7}{6},\frac{5}{3},1,\frac{13}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]\Bigg)-$$
$$7\,(c+d\,x)\,\text{AppellF1}\left[\frac{1}{6},\frac{2}{3},1,\frac{7}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]$$
$$\Big(13\,b\,f\,\left(a\,d\,(-3\,d\,e+17\,c\,f+14\,d\,f\,x)+b\,(-32\,c\,d\,e+18\,c^2\,f-35\,d^2\,e\,x+21\,c\,d\,f\,x)\right)$$
$$\text{AppellF1}\left[\frac{7}{6},\frac{2}{3},1,\frac{13}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+14\,(5\,b\,d\,e-3\,b\,c\,f-2\,a\,d\,f)$$
$$\Big(3\,b\,(d\,e-c\,f)\,\text{AppellF1}\left[\frac{13}{6},\frac{2}{3},2,\frac{19}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+2$$
$$(-b\,c+a\,d)\,f\,\text{AppellF1}\left[\frac{13}{6},\frac{5}{3},1,\frac{19}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]\Big)\Big)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(d^2\,(e+f\,x)\,\Bigg(7\,b\,f\,(c+d\,x)\,\text{AppellF1}\left[\frac{1}{6},\frac{2}{3},1,\frac{7}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+$$
$$b\,(-6\,d\,e+6\,c\,f)\,\text{AppellF1}\left[\frac{7}{6},\frac{2}{3},2,\frac{13}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+$$
$$4\,(b\,c-a\,d)\,f\,\text{AppellF1}\left[\frac{7}{6},\frac{5}{3},1,\frac{13}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]\Bigg)$$
$$\Bigg(13\,b\,f\,(c+d\,x)\,\text{AppellF1}\left[\frac{7}{6},\frac{2}{3},1,\frac{13}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+$$
$$b\,(-6\,d\,e+6\,c\,f)\,\text{AppellF1}\left[\frac{13}{6},\frac{2}{3},2,\frac{19}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]+$$
$$4\,(b\,c-a\,d)\,f\,\text{AppellF1}\left[\frac{13}{6},\frac{5}{3},1,\frac{19}{6},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\right]\Bigg)\Bigg)$$

Problem 3166: Result more than twice size of optimal antiderivative.

$$\int\sqrt{a+b\,x}\,(c+d\,x)^{1/3}\,(e+f\,x)^{1/4}\,dx$$

Optimal (type 6, 125 leaves, 3 steps):

$$\left(2\,(a+b\,x)^{3/2}\,(c+d\,x)^{1/3}\,(e+f\,x)^{1/4}\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{3},-\frac{1}{4},\frac{5}{2},-\frac{d\,(a+b\,x)}{b\,c-a\,d},-\frac{f\,(a+b\,x)}{b\,e-a\,f}\right]\right)\Big/\left(3\,b\left(\frac{b\,(c+d\,x)}{b\,c-a\,d}\right)^{1/3}\left(\frac{b\,(e+f\,x)}{b\,e-a\,f}\right)^{1/4}\right)$$

Result (type 6, 1077 leaves):

$$\left(\frac{12\,(3\,b\,d\,e+4\,b\,c\,f+6\,a\,d\,f)}{325\,b\,d\,f}+\frac{12\,x}{25}\right)\sqrt{a+b\,x}\;(c+d\,x)^{1/3}\;(e+f\,x)^{1/4}-$$

$$\frac{1}{82\,225\,b^3\,d\,f\left(c+\frac{(a+b\,x)\left(d-\frac{a\,d}{a+b\,x}\right)}{b}\right)^{2/3}\left(e+\frac{(a+b\,x)\left(f-\frac{a\,f}{a+b\,x}\right)}{b}\right)^{3/4}}$$

$$72\,(a+b\,x)^{3/2}\left(\left(1058\left(-21\,a^3\,d^3\,f^3+9\,a^2\,b\,d^2\,f^2\,(3\,d\,e+4\,c\,f)-\right.\right.\right.$$

$$\left.a\,b^2\,d\,f\,(20\,d^2\,e^2+14\,c\,d\,e\,f+29\,c^2\,f^2)+b^3\,(5\,d^3\,e^3+5\,c\,d^2\,e^2\,f+2\,c^2\,d\,e\,f^2+9\,c^3\,f^3)\right)$$

$$\left.\text{AppellF1}\left[\frac{11}{12},\frac{2}{3},\frac{3}{4},\frac{23}{12},\frac{-b\,c+a\,d}{d\,(a+b\,x)},\frac{-b\,e+a\,f}{f\,(a+b\,x)}\right]\right)\Big/$$

$$\left((a+b\,x)\left(-23\,d\,f\,\text{AppellF1}\left[\frac{11}{12},\frac{2}{3},\frac{3}{4},\frac{23}{12},\frac{-b\,c+a\,d}{d\,(a+b\,x)},\frac{-b\,e+a\,f}{f\,(a+b\,x)}\right]+\frac{1}{a+b\,x}\right.\right.$$

$$\left(9\,d\,(b\,e-a\,f)\,\text{AppellF1}\left[\frac{23}{12},\frac{2}{3},\frac{7}{4},\frac{35}{12},\frac{-b\,c+a\,d}{d\,(a+b\,x)},\frac{-b\,e+a\,f}{f\,(a+b\,x)}\right]+\right.$$

$$\left.\left.\left.8\,(b\,c-a\,d)\,f\,\text{AppellF1}\left[\frac{23}{12},\frac{5}{3},\frac{3}{4},\frac{35}{12},\frac{-b\,c+a\,d}{d\,(a+b\,x)},\frac{-b\,e+a\,f}{f\,(a+b\,x)}\right]\right)\right)\right)+$$

$$\left(11\left(7\,a^2\,d^2\,f^2-2\,a\,b\,d\,f\,(3\,d\,e+4\,c\,f)+b^2\,(5\,d^2\,e^2-4\,c\,d\,e\,f+6\,c^2\,f^2)\right)\right.$$

$$\left(35\,d\,f\left(\frac{b\,c\left(\frac{17\,b\,e}{a+b\,x}+f\left(23-\frac{17\,a}{a+b\,x}\right)\right)}{a+b\,x}+d\left(f\left(23+\frac{17\,a^2}{(a+b\,x)^2}-\frac{46\,a}{a+b\,x}\right)+\frac{b\,e\left(23-\frac{17\,a}{a+b\,x}\right)}{a+b\,x}\right)\right)\right.$$

$$\text{AppellF1}\left[\frac{23}{12},\frac{2}{3},\frac{3}{4},\frac{35}{12},\frac{-b\,c+a\,d}{d\,(a+b\,x)},\frac{-b\,e+a\,f}{f\,(a+b\,x)}\right]-$$

$$\frac{1}{a+b\,x}23\left(d+\frac{b\,c}{a+b\,x}-\frac{a\,d}{a+b\,x}\right)\left(f+\frac{b\,e}{a+b\,x}-\frac{a\,f}{a+b\,x}\right)$$

$$\left(9\,d\,(b\,e-a\,f)\,\text{AppellF1}\left[\frac{35}{12},\frac{2}{3},\frac{7}{4},\frac{47}{12},\frac{-b\,c+a\,d}{d\,(a+b\,x)},\frac{-b\,e+a\,f}{f\,(a+b\,x)}\right]+\right.$$

$$\left.\left.\left.8\,(b\,c-a\,d)\,f\,\text{AppellF1}\left[\frac{35}{12},\frac{5}{3},\frac{3}{4},\frac{47}{12},\frac{-b\,c+a\,d}{d\,(a+b\,x)},\frac{-b\,e+a\,f}{f\,(a+b\,x)}\right]\right)\right)\right)\Big/$$

$$\left(d\,f\left(35\,d\,f\,\text{AppellF1}\left[\frac{23}{12},\frac{2}{3},\frac{3}{4},\frac{35}{12},\frac{-b\,c+a\,d}{d\,(a+b\,x)},\frac{-b\,e+a\,f}{f\,(a+b\,x)}\right]+\frac{1}{a+b\,x}\right.\right.$$

$$\left((-9\,b\,d\,e+9\,a\,d\,f)\,\text{AppellF1}\left[\frac{35}{12},\frac{2}{3},\frac{7}{4},\frac{47}{12},\frac{-b\,c+a\,d}{d\,(a+b\,x)},\frac{-b\,e+a\,f}{f\,(a+b\,x)}\right]+\right.$$

$$\left.\left.\left.\left.8\,(-b\,c+a\,d)\,f\,\text{AppellF1}\left[\frac{35}{12},\frac{5}{3},\frac{3}{4},\frac{47}{12},\frac{-b\,c+a\,d}{d\,(a+b\,x)},\frac{-b\,e+a\,f}{f\,(a+b\,x)}\right]\right)\right)\right)\right)$$

Problem 3167: Result more than twice size of optimal antiderivative.

$$\int (a+b\,x)^{1/3}\,\sqrt{c+d\,x}\,(e+f\,x)^{1/4}\,dx$$

Optimal (type 6, 125 leaves, 3 steps):

$$\left(3\,(a+b\,x)^{4/3}\,\sqrt{c+d\,x}\,(e+f\,x)^{1/4}\,\text{AppellF1}\left[\frac{4}{3},-\frac{1}{2},-\frac{1}{4},\frac{7}{3},-\frac{d\,(a+b\,x)}{b\,c-a\,d},-\frac{f\,(a+b\,x)}{b\,e-a\,f}\right]\right)\Big/\left(4\,b\,\sqrt{\frac{b\,(c+d\,x)}{b\,c-a\,d}}\,\left(\frac{b\,(e+f\,x)}{b\,e-a\,f}\right)^{1/4}\right)$$

Result (type 6, 1078 leaves):

$$\frac{1}{3575\,(a+b\,x)^{2/3}\,(e+f\,x)^{3/4}}\sqrt{c+d\,x}\,\Bigg(\frac{132\,(a+b\,x)\,(e+f\,x)\,(4\,a\,d\,f+b\,(3\,d\,e+6\,c\,f+13\,d\,f\,x))}{b\,d\,f}-\Bigg(72\,(c+d\,x)\,\Bigg(-23\,(b\,c-a\,d)\,(d\,e-c\,f)\,(3\,b\,d\,e-7\,b\,c\,f+4\,a\,d\,f)\,\text{AppellF1}\Big[\frac{11}{12},\frac{2}{3},\frac{3}{4},\frac{23}{12},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\Big]\Bigg/\Bigg(9\,b\,(d\,e-c\,f)\,\text{AppellF1}\Big[\frac{11}{12},\frac{2}{3},\frac{7}{4},\frac{23}{12},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\Big]+8\,(-b\,c+a\,d)\,f\,\text{AppellF1}\Big[\frac{11}{12},\frac{5}{3},\frac{3}{4},\frac{23}{12},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\Big]\Bigg)-11\,(c+d\,x)\,\text{AppellF1}\Big[-\frac{1}{12},\frac{2}{3},\frac{3}{4},\frac{11}{12},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\Big]\Bigg(23\,b\,f\,(-2\,a^2\,d^2\,f\,(-2\,d\,e+35\,c\,f+33\,d\,f\,x)-b^2\,(7\,c^2\,f^2\,(12\,c+11\,d\,x)-2\,c\,d\,e\,f\,(38\,c+33\,d\,x)+d^2\,e^2\,(58\,c+55\,d\,x))+a\,b\,d\,(99\,c^2\,f^2+d^2\,e\,(3\,e+44\,f\,x)+2\,c\,d\,f\,(15\,e+44\,f\,x)))\,\text{AppellF1}\Big[\frac{11}{12},\frac{2}{3},\frac{3}{4},\frac{23}{12},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\Big]+11\,(6\,a^2\,d^2\,f^2-4\,a\,b\,d\,f\,(d\,e+2\,c\,f)+b^2\,(5\,d^2\,e^2-6\,c\,d\,e\,f+7\,c^2\,f^2))\,\Bigg(9\,b\,(d\,e-c\,f)\,\text{AppellF1}\Big[\frac{23}{12},\frac{2}{3},\frac{7}{4},\frac{35}{12},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\Big]+8\,(-b\,c+a\,d)\,f\,\text{AppellF1}\Big[\frac{23}{12},\frac{5}{3},\frac{3}{4},\frac{35}{12},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\Big]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/\Bigg(d^3\,\Bigg(11\,b\,f\,(c+d\,x)\,\text{AppellF1}\Big[-\frac{1}{12},\frac{2}{3},\frac{3}{4},\frac{11}{12},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\Big]+b\,(-9\,d\,e+9\,c\,f)\,\text{AppellF1}\Big[\frac{11}{12},\frac{2}{3},\frac{7}{4},\frac{23}{12},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\Big]+8\,(b\,c-a\,d)\,f\,\text{AppellF1}\Big[\frac{11}{12},\frac{5}{3},\frac{3}{4},\frac{23}{12},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\Big]\Bigg)\Bigg(23\,b\,f\,(c+d\,x)\,\text{AppellF1}\Big[\frac{11}{12},\frac{2}{3},\frac{3}{4},\frac{23}{12},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\Big]+b\,(-9\,d\,e+9\,c\,f)\,\text{AppellF1}\Big[\frac{23}{12},\frac{2}{3},\frac{7}{4},\frac{35}{12},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\Big]+8\,(b\,c-a\,d)\,f\,\text{AppellF1}\Big[\frac{23}{12},\frac{5}{3},\frac{3}{4},\frac{35}{12},\frac{b\,c-a\,d}{b\,c+b\,d\,x},\frac{-d\,e+c\,f}{f\,(c+d\,x)}\Big]\Bigg)\Bigg)$$

Problem 3168: Result more than twice size of optimal antiderivative.

$$\int (a+b\,x)^4\,(A+B\,x)\,(d+e\,x)^m\,dx$$

Optimal (type 3, 234 leaves, 2 steps):

$$-\frac{(b d-a e)^4 (B d-A e) (d+e x)^{1+m}}{e^6 (1+m)}+\frac{(b d-a e)^3 (5 b B d-4 A b e-a B e) (d+e x)^{2+m}}{e^6 (2+m)}-\frac{2 b (b d-a e)^2 (5 b B d-3 A b e-2 a B e) (d+e x)^{3+m}}{e^6 (3+m)}+\frac{2 b^2 (b d-a e) (5 b B d-2 A b e-3 a B e) (d+e x)^{4+m}}{e^6 (4+m)}-\frac{b^3 (5 b B d-A b e-4 a B e) (d+e x)^{5+m}}{e^6 (5+m)}+\frac{b^4 B (d+e x)^{6+m}}{e^6 (6+m)}$$

Result (type 3, 635 leaves):

$$\frac{1}{e^6 (1+m) (2+m) (3+m) (4+m) (5+m) (6+m)}(d+e x)^{1+m} \Big(a^4 e^4 (360+342 m+119 m^2+18 m^3+m^4) (-B d+A e (2+m)+B e (1+m) x)+4 a^3 b e^3 (120+74 m+15 m^2+m^3) (A e (3+m) (-d+e (1+m) x)+B (2 d^2-2 d e (1+m) x+e^2 (2+3 m+m^2) x^2))+6 a^2 b^2 e^2 (30+11 m+m^2) (A e (4+m) (2 d^2-2 d e (1+m) x+e^2 (2+3 m+m^2) x^2)+B (-6 d^3+6 d^2 e (1+m) x-3 d e^2 (2+3 m+m^2) x^2+e^3 (6+11 m+6 m^2+m^3) x^3))+4 a b^3 e (6+m) (A e (5+m) (-6 d^3+6 d^2 e (1+m) x-3 d e^2 (2+3 m+m^2) x^2+e^3 (6+11 m+6 m^2+m^3) x^3)+B (24 d^4-24 d^3 e (1+m) x+12 d^2 e^2 (2+3 m+m^2) x^2-4 d e^3 (6+11 m+6 m^2+m^3) x^3+e^4 (24+50 m+35 m^2+10 m^3+m^4) x^4))-b^4 (-A e (6+m) (24 d^4-24 d^3 e (1+m) x+12 d^2 e^2 (2+3 m+m^2) x^2-4 d e^3 (6+11 m+6 m^2+m^3) x^3+e^4 (24+50 m+35 m^2+10 m^3+m^4) x^4)+B (120 d^5-120 d^4 e (1+m) x+60 d^3 e^2 (2+3 m+m^2) x^2-20 d^2 e^3 (6+11 m+6 m^2+m^3) x^3+5 d e^4 (24+50 m+35 m^2+10 m^3+m^4) x^4-e^5 (120+274 m+225 m^2+85 m^3+15 m^4+m^5) x^5))\Big)$$

Problem 3169: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^3 (A+B x) (d+e x)^m \, dx$$

Optimal (type 3, 186 leaves, 2 steps):

$$\frac{(b d-a e)^3 (B d-A e) (d+e x)^{1+m}}{e^5 (1+m)}-\frac{(b d-a e)^2 (4 b B d-3 A b e-a B e) (d+e x)^{2+m}}{e^5 (2+m)}+\frac{3 b (b d-a e) (2 b B d-A b e-a B e) (d+e x)^{3+m}}{e^5 (3+m)}-\frac{b^2 (4 b B d-A b e-3 a B e) (d+e x)^{4+m}}{e^5 (4+m)}+\frac{b^3 B (d+e x)^{5+m}}{e^5 (5+m)}$$

Result (type 3, 391 leaves):

$$\frac{1}{e^5 (1+m) (2+m) (3+m) (4+m) (5+m)} \left((d+e x)^{1+m} \left(a^3 e^3 \left(60+47 m+12 m^2+m^3\right) (-B d+A e (2+m)+B e (1+m) x)+3 a^2 b e^2 \left(20+9 m+m^2\right) \left(A e (3+m) (-d+e (1+m) x)+B \left(2 d^2-2 d e (1+m) x+e^2 \left(2+3 m+m^2\right) x^2\right)\right)+3 a b^2 e (5+m) \left(A e (4+m) \left(2 d^2-2 d e (1+m) x+e^2 \left(2+3 m+m^2\right) x^2\right)+B \left(-6 d^3+6 d^2 e (1+m) x-3 d e^2 \left(2+3 m+m^2\right) x^2+e^3 \left(6+11 m+6 m^2+m^3\right) x^3\right)\right)+b^3 \left(A e (5+m) \left(-6 d^3+6 d^2 e (1+m) x-3 d e^2 \left(2+3 m+m^2\right) x^2+e^3 \left(6+11 m+6 m^2+m^3\right) x^3\right)+B \left(24 d^4-24 d^3 e (1+m) x+12 d^2 e^2 \left(2+3 m+m^2\right) x^2-4 d e^3 \left(6+11 m+6 m^2+m^3\right) x^3+e^4 \left(24+50 m+35 m^2+10 m^3+m^4\right) x^4\right)\right)\right)\right)$$

Problem 3174: Unable to integrate problem.

$$\int \frac{(A+B x) (d+e x)^m}{(a+b x)^2} \, dx$$

Optimal (type 5, 112 leaves, 2 steps):

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

Result (type 8, 22 leaves):

$$\int \frac{(A+B x) (d+e x)^m}{(a+b x)^2} \, dx$$

Problem 3181: Result more than twice size of optimal antiderivative.

$$\int \frac{(2+3 x)^m (3+5 x)^3}{1-2 x} \, dx$$

Optimal (type 5, 90 leaves, 3 steps):

$$-\frac{5135 (2+3 x)^{1+m}}{216 (1+m)}-\frac{725 (2+3 x)^{2+m}}{108 (2+m)}-\frac{125 (2+3 x)^{3+m}}{54 (3+m)}+\frac{1331 (2+3 x)^{1+m} \text{Hypergeometric2F1}\left[1, 1+m, 2+m, \frac{2}{7} (2+3 x)\right]}{56 (1+m)}$$

Result (type 5, 240 leaves):

$$\frac{1}{432}\,(2+3x)^m\left(-\frac{32670\,(2+3x)}{1+m}+\frac{2475\,\left(40+36x-36x^2-7^{2+m}\,(4+6x)^{-m}-6m\,\left(-2+x+6x^2\right)\right)}{2+3m+m^2}+\left(250\,(4+6x)^{-m}\,\left(7^{3+m}-316\,(4+6x)^m-162x\,(4+6x)^m+324x^2\,(4+6x)^m-216x^3\,(4+6x)^m-9m^2\,(1-2x)^2\,(2+3x)\,(4+6x)^m-3m\,(4+6x)^m\,\left(46-59x-120x^2+108x^3\right)\right)\right)\Big/\left((1+m)\,(2+m)\,(3+m)\right)-\frac{35937\,\left(\frac{4+6x}{-3+6x}\right)^{-m}\text{Hypergeometric2F1}\left[-m,-m,1-m,\frac{7}{3-6x}\right]}{m}\right)$$

Problem 3187: Unable to integrate problem.

$$\int\frac{(a+bx)^m}{(e+fx)^2}\,dx$$

Optimal (type 5, 52 leaves, 1 step):

$$\frac{b\,(a+bx)^{1+m}\,\text{Hypergeometric2F1}\left[2,1+m,2+m,-\frac{f\,(a+bx)}{be-af}\right]}{(be-af)^2\,(1+m)}$$

Result (type 8, 17 leaves):

$$\int\frac{(a+bx)^m}{(e+fx)^2}\,dx$$

Problem 3188: Unable to integrate problem.

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

Optimal (type 5, 187 leaves, 4 steps):

$$-\frac{f\,(a+bx)^{1+m}}{(be-af)\,(de-cf)\,(e+fx)}+\frac{d^2\,(a+bx)^{1+m}\,\text{Hypergeometric2F1}\left[1,1+m,2+m,-\frac{d\,(a+bx)}{bc-ad}\right]}{(bc-ad)\,(de-cf)^2\,(1+m)}+\left(f\,(adf-b\,(de\,(1-m)+cfm))\,(a+bx)^{1+m}\,\text{Hypergeometric2F1}\left[1,1+m,2+m,-\frac{f\,(a+bx)}{be-af}\right]\right)\Big/\left((be-af)^2\,(de-cf)^2\,(1+m)\right)$$

Result (type 8, 24 leaves):

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

Problem 3189: Unable to integrate problem.

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

Optimal (type 5, 281 leaves, 5 steps):

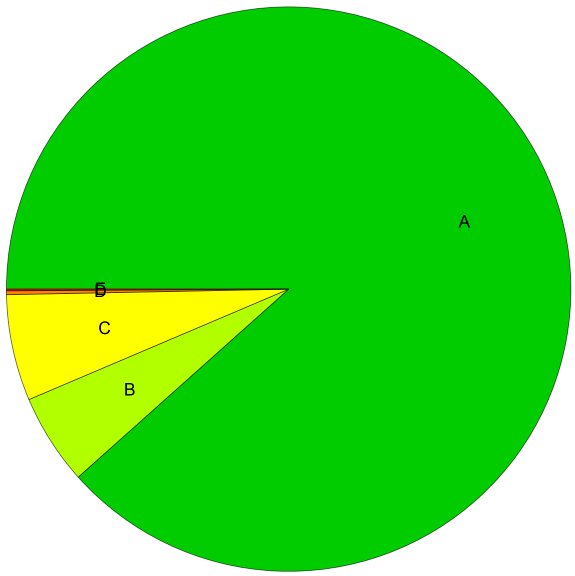
$$\frac{f\,(b\,d\,e+b\,c\,f-2\,a\,d\,f)\,(a+b\,x)^{1+m}}{(b\,c-a\,d)\,(b\,e-a\,f)\,(d\,e-c\,f)^2\,(e+f\,x)}+\frac{d\,(a+b\,x)^{1+m}}{(b\,c-a\,d)\,(d\,e-c\,f)\,(c+d\,x)\,(e+f\,x)}+$$
$$\left(d^2\,(2\,a\,d\,f-b\,(c\,f\,(2-m)+d\,e\,m))\,(a+b\,x)^{1+m}\,\text{Hypergeometric2F1}\left[1,\,1+m,\,2+m,\,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\right)\Big/$$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

Result (type 8, 24 leaves):

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

Summary of Integration Test Results

3189 integration problems



A - 2819 optimal antiderivatives

B - 166 more than twice size of optimal antiderivatives

C - 194 unnecessarily complex antiderivatives

D - 7 unable to integrate problems

E - 3 integration timeouts