Mathematica 11.3 Integration Test Results

Test results for the 2646 problems in "1.2.1.3 (d+e x)^m (f+g x) (a+b x+c x^2)^p.m"

Problem 433: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 427 leaves, 10 steps):

$$\frac{2\,a^2\,e^3\,\sqrt{e\,x}\,\left(325\,A+539\,B\,x\right)\,\sqrt{a+c\,x^2}}{15015\,c^2}+\frac{28\,a^3\,B\,e^4\,x\,\sqrt{a+c\,x^2}}{195\,c^{5/2}\,\sqrt{e\,x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{10\,a\,A\,e^3\,\sqrt{e\,x}\,\left(a+c\,x^2\right)^{3/2}}{77\,c^2}-\frac{14\,a\,B\,e^2\,(e\,x)^{3/2}\,\left(a+c\,x^2\right)^{3/2}}{117\,c^2}+\frac{2\,A\,e\,(e\,x)^{5/2}\,\left(a+c\,x^2\right)^{3/2}}{11\,c}+\frac{2\,B\,(e\,x)^{7/2}\,\left(a+c\,x^2\right)^{3/2}}{13\,c}-\left(28\,a^{13/4}\,B\,e^4\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\,\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\,\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(195\,c^{11/4}\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)+\left(2\,a^{11/4}\,\left(539\,\sqrt{a}\,B+325\,A\,\sqrt{c}\right)\,e^4\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\,\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\,\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(15015\,c^{11/4}\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 270 leaves):

$$\left(2 e^4 \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} \left(a + c x^2\right) \left(3234 a^3 B + 315 c^3 x^5 (13 A + 11 B x) + 10 a c^2 x^3 (117 A + 77 B x) - 2 a^2 c x (975 A + 539 B x)\right) - 3234 a^{7/2} B \sqrt{c} \sqrt{1 + \frac{a}{c x^2}} x^{3/2} \text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right], -1\right] + 6 a^3 \left(539 \sqrt{a} B + 325 i A \sqrt{c}\right) \sqrt{c} \sqrt{1 + \frac{a}{c x^2}} x^{3/2} \text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right], -1\right]\right)\right) \Bigg/ \left(45045 \sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} c^3 \sqrt{e x} \sqrt{a + c x^2}\right)$$

Problem 434: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 397 leaves, 9 steps):

$$-\frac{4 a^2 A e^3 x \sqrt{a + c x^2}}{15 c^{3/2} \sqrt{e x} \left(\sqrt{a} + \sqrt{c} x\right)} + \frac{2 a e^2 \sqrt{e x} (25 a B - 77 A c x) \sqrt{a + c x^2}}{1155 c^2} - \frac{10 a B e^2 \sqrt{e x} \left(a + c x^2\right)^{3/2}}{77 c^2} + \frac{2 A e (e x)^{3/2} \left(a + c x^2\right)^{3/2}}{9 c} + \frac{2 B (e x)^{5/2} \left(a + c x^2\right)^{3/2}}{11 c} + \left(4 a^{9/4} A e^3 \sqrt{x} \left(\sqrt{a} + \sqrt{c} x\right) \sqrt{\frac{a + c x^2}{\left(\sqrt{a} + \sqrt{c} x\right)^2}} \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{c^{1/4} \sqrt{x}}{a^{1/4}}\right], \frac{1}{2}\right]\right) \Bigg/ \left(15 c^{7/4} \sqrt{e x} \sqrt{a + c x^2}\right) + \left(2 a^{9/4} \left(25 \sqrt{a} B - 77 A \sqrt{c}\right) e^3 \sqrt{x} \left(\sqrt{a} + \sqrt{c} x\right) \sqrt{\frac{a + c x^2}{\left(\sqrt{a} + \sqrt{c} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{c^{1/4} \sqrt{x}}{a^{1/4}}\right], \frac{1}{2}\right]\right) \Bigg/ \left(1155 c^{9/4} \sqrt{e x} \sqrt{a + c x^2}\right)$$

Result (type 4, 257 leaves):

$$-\left(\left(2 e^3 \left(\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}}\left(a+c x^2\right)\left(-35 c^2 x^4 (11 A+9 B x)+6 a^2 (77 A+25 B x)-2 a c x^2 (77 A+45 B x)\right)-462 a^{5/2} A \sqrt{c} \sqrt{1+\frac{a}{c x^2}}\, x^{3/2} \text{EllipticE}\left[\mathrm{i}\, \text{ArcSinh}\left[\frac{\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+6 a^{5/2}\left(-25\, \mathrm{i} \sqrt{a}\, B+77 A \sqrt{c}\right)\sqrt{1+\frac{a}{c x^2}}\, x^{3/2} \text{EllipticF}\left[\mathrm{i}\, \text{ArcSinh}\left[\frac{\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(3465 \sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}}\, c^2 \sqrt{e x}\sqrt{a+c x^2}\right)\right)$$

Problem 435: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 363 leaves, 8 steps):

$$-\frac{2 a e \sqrt{e x}\, (5 A+7 B x) \sqrt{a+c x^2}}{105 c}-\frac{4 a^2 B e^2 x \sqrt{a+c x^2}}{15 c^{3/2} \sqrt{e x}\left(\sqrt{a}+\sqrt{c}\, x\right)}+\frac{2 A e \sqrt{e x}\left(a+c x^2\right)^{3/2}}{7 c}+\frac{2 B (e x)^{3/2}\left(a+c x^2\right)^{3/2}}{9 c}+\left(4 a^{9/4} B e^2 \sqrt{x}\left(\sqrt{a}+\sqrt{c}\, x\right)\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c}\, x\right)^2}}\, \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(15 c^{7/4}\sqrt{e x}\sqrt{a+c x^2}\right)-\left(2 a^{7/4}\left(7\sqrt{a}\, B+5 A\sqrt{c}\right) e^2 \sqrt{x}\left(\sqrt{a}+\sqrt{c}\, x\right)\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c}\, x\right)^2}}\, \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(105 c^{7/4}\sqrt{e x}\sqrt{a+c x^2}\right)$$

Result (type 4, 251 leaves):

$$-\left(\left(2 e^2 \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}\ (a + c x^2)\ \left(42 a^2 B - 5 c^2 x^3\ (9 A + 7 B x) - 2 a c x\ (15 A + 7 B x)\right) - \right.\right.\right.$$

$$42 a^{5/2} B \sqrt{c}\ \sqrt{1 + \frac{a}{c x^2}}\ x^{3/2}\ \text{EllipticE}\left[i\ \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right], -1\right] +$$

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

$$\left.\left(315 \sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}\ c^2 \sqrt{e x}\ \sqrt{a + c x^2}\right)\right)$$

Problem 436: Result unnecessarily involves imaginary or complex numbers.

$$\int \sqrt{e x}\ (A + B x)\ \sqrt{a + c x^2}\ dx$$

Optimal (type 4, 328 leaves, 7 steps):

$$\frac{4 a A e x \sqrt{a + c x^2}}{5 \sqrt{c}\ \sqrt{e x}\ \left(\sqrt{a} + \sqrt{c}\ x\right)} - \frac{2 \sqrt{e x}\ (5 a B - 21 A c x)\ \sqrt{a + c x^2}}{105 c} + \frac{2 B \sqrt{e x}\ (a + c x^2)^{3/2}}{7 c} -$$

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

$$\left(5 c^{3/4} \sqrt{e x}\ \sqrt{a + c x^2}\right) - \left(2 a^{5/4} \left(5 \sqrt{a}\ B - 21 A \sqrt{c}\right) e \sqrt{x}\ \left(\sqrt{a} + \sqrt{c}\ x\right)\right.$$

$$\left.\sqrt{\frac{a + c x^2}{\left(\sqrt{a} + \sqrt{c}\ x\right)^2}}\ \text{EllipticF}\left[2\, \text{ArcTan}\left[\frac{c^{1/4} \sqrt{x}}{a^{1/4}}\right], \frac{1}{2}\right]\right) \Big/ \left(105 c^{5/4} \sqrt{e x}\ \sqrt{a + c x^2}\right)$$

Result (type 4, 236 leaves):

$$\left(2 e \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} \left(a + c x^2\right) \left(3 c x^2 (7 A + 5 B x) + 2 a (21 A + 5 B x)\right) - 42 a^{3/2} A \sqrt{c} \sqrt{1 + \frac{a}{c x^2}} x^{3/2} \text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right], -1\right] + 2 a^{3/2} \left(-5 i \sqrt{a} B + 21 A \sqrt{c}\right) \sqrt{1 + \frac{a}{c x^2}} x^{3/2} \text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right], -1\right]\right)\right) \Big/ \left(105 \sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} c \sqrt{e x} \sqrt{a + c x^2}\right)$$

Problem 437: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(A + B x) \sqrt{a + c x^2}}{\sqrt{e x}} \, dx$$

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

$$\frac{2 \sqrt{e x} (5 A + 3 B x) \sqrt{a + c x^2}}{15 e} + \frac{4 a B x \sqrt{a + c x^2}}{5 \sqrt{c} \sqrt{e x} \left(\sqrt{a} + \sqrt{c} x\right)} - \left(4 a^{5/4} B \sqrt{x} \left(\sqrt{a} + \sqrt{c} x\right) \sqrt{\frac{a + c x^2}{\left(\sqrt{a} + \sqrt{c} x\right)^2}} \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{c^{1/4} \sqrt{x}}{a^{1/4}}\right], \frac{1}{2}\right]\right) \Big/ \left(5 c^{3/4} \sqrt{e x} \sqrt{a + c x^2}\right) + \left(2 a^{3/4} \left(3 \sqrt{a} B + 5 A \sqrt{c}\right) \sqrt{x} \left(\sqrt{a} + \sqrt{c} x\right) \sqrt{\frac{a + c x^2}{\left(\sqrt{a} + \sqrt{c} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{c^{1/4} \sqrt{x}}{a^{1/4}}\right], \frac{1}{2}\right]\right) \Big/ \left(15 c^{3/4} \sqrt{e x} \sqrt{a + c x^2}\right)$$

Result (type 4, 227 leaves):

$$\left(2\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(a+c x^2\right)\left(6 a B+c x\left(5 A+3 B x\right)\right)-\right.$$

$$12 a^{3/2} B\sqrt{c}\sqrt{1+\frac{a}{c x^2}}\, x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

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

$$\left(15\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\, c\sqrt{e x}\sqrt{a+c x^2}\right)$$

Problem 438: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 300 leaves, 6 steps):

$$-\frac{2\left(3 A-B x\right)\sqrt{a+c x^2}}{3 e\sqrt{e x}}+\frac{4 A\sqrt{c}\, x\sqrt{a+c x^2}}{e\sqrt{e x}\left(\sqrt{a}+\sqrt{c}\, x\right)}-\frac{1}{e\sqrt{e x}\sqrt{a+c x^2}}$$

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

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

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

Result (type 4, 215 leaves):

$$\left(x\left(2\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(3A+Bx)\,(a+cx^2)-12\sqrt{a}\,A\sqrt{c}\,\sqrt{1+\frac{a}{cx^2}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+4\sqrt{a}\left(i\sqrt{a}\,B+3A\sqrt{c}\right)\sqrt{1+\frac{a}{cx^2}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(3\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(e\,x)^{3/2}\sqrt{a+cx^2}\right)$$

Problem 439: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(A+Bx)\sqrt{a+cx^2}}{(e\,x)^{5/2}}\,dx$$

Optimal (type 4, 298 leaves, 6 steps):

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

Result (type 4, 214 leaves):

$$\left(x\left(-2\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(A-3Bx)\,(a+cx^2)-12\sqrt{a}\,B\sqrt{c}\,\sqrt{1+\frac{a}{cx^2}}\,x^{5/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+4\left(3\sqrt{a}\,B+i\,A\sqrt{c}\right)\sqrt{c}\,\sqrt{1+\frac{a}{cx^2}}\,x^{5/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(3\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(e\,x)^{5/2}\sqrt{a+cx^2}\right)$$

Problem 440: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(A+Bx)\sqrt{a+cx^2}}{(e\,x)^{7/2}}\,dx$$

Optimal (type 4, 338 leaves, 7 steps):

$$-\frac{4Ac\sqrt{a+cx^2}}{5ae^3\sqrt{ex}}-\frac{2(3A+5Bx)\sqrt{a+cx^2}}{15e\,(e\,x)^{5/2}}+\frac{4Ac^{3/2}x\sqrt{a+cx^2}}{5ae^3\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}-\left(4Ac^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(5a^{3/4}e^3\sqrt{ex}\,\sqrt{a+cx^2}\right)+\left(2\left(5\sqrt{a}\,B+3A\sqrt{c}\right)c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(15a^{3/4}e^3\sqrt{ex}\,\sqrt{a+cx^2}\right)$$

Result (type 4, 217 leaves):

$$\left(x\left(-2\sqrt{a}\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(3A+5Bx)\,(a+cx^2)-12Ac^{3/2}\sqrt{1+\frac{a}{cx^2}}\,x^{7/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+4\left(5i\sqrt{a}\,B+3A\sqrt{c}\right)c\sqrt{1+\frac{a}{cx^2}}\,x^{7/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(15\sqrt{a}\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(ex)^{7/2}\sqrt{a+cx^2}\right)$$

Problem 441: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(A+Bx)\sqrt{a+cx^2}}{(ex)^{9/2}}\,dx$$

Optimal (type 4, 368 leaves, 8 steps):

$$-\frac{4Ac\sqrt{a+cx^2}}{21ae^3(ex)^{3/2}}-\frac{4Bc\sqrt{a+cx^2}}{5ae^4\sqrt{ex}}-\frac{2(5A+7Bx)\sqrt{a+cx^2}}{35e(ex)^{7/2}}+\frac{4Bc^{3/2}x\sqrt{a+cx^2}}{5ae^4\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}-\left(4Bc^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(5a^{3/4}e^4\sqrt{ex}\sqrt{a+cx^2}\right)+\left(2\left(21\sqrt{a}\,B-5A\sqrt{c}\right)c^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(105a^{5/4}e^4\sqrt{ex}\sqrt{a+cx^2}\right)$$

Result (type 4, 236 leaves):

$$-\left(\left(2\sqrt{e\,x}\left(\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(a+c\,x^2\right)\left(10\,A\,c\,x^2+3\,a\,(5\,A+7\,B\,x)\right)+\right.\right.\right.$$

$$42\sqrt{a}\,B\,c^{3/2}\sqrt{1+\frac{a}{c\,x^2}}\,x^{9/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

$$\left.\left.2\,i\left(21\,i\sqrt{a}\,B+5\,A\sqrt{c}\right)c^{3/2}\sqrt{1+\frac{a}{c\,x^2}}\,x^{9/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/$$

$$\left.\left(105\,a\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,e^5\,x^4\sqrt{a+c\,x^2}\right)\right)$$

Problem 442: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 438 leaves, 10 steps):

$$-\frac{8\,a^3\,A\,e^3\,x\sqrt{a+c\,x^2}}{65\,c^{3/2}\sqrt{e\,x}\left(\sqrt{a}+\sqrt{c}\,x\right)}+\frac{4\,a^2\,e^2\sqrt{e\,x}\,(65\,a\,B-231\,A\,c\,x)\sqrt{a+c\,x^2}}{15015\,c^2}+$$

$$\frac{2\,a\,e^2\sqrt{e\,x}\,(13\,a\,B-77\,A\,c\,x)\left(a+c\,x^2\right)^{3/2}}{3003\,c^2}-\frac{2\,a\,B\,e^2\sqrt{e\,x}\left(a+c\,x^2\right)^{5/2}}{33\,c^2}+$$

$$\frac{2\,A\,e\,(e\,x)^{3/2}\left(a+c\,x^2\right)^{5/2}}{13\,c}+\frac{2\,B\,(e\,x)^{5/2}\left(a+c\,x^2\right)^{5/2}}{15\,c}+$$

$$\left(8\,a^{13/4}\,A\,e^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/$$

$$\left(65\,c^{7/4}\sqrt{e\,x}\sqrt{a+c\,x^2}\right)+\left(4\,a^{13/4}\left(65\sqrt{a}\,B-231\,A\sqrt{c}\right)e^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$

$$\left.\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(15015\,c^{9/4}\sqrt{e\,x}\sqrt{a+c\,x^2}\right)$$

Result (type 4, 276 leaves):

$$-\left(\left(2 e^3 \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} \left(a + c x^2\right) \left(-77 c^3 x^6 (15 A + 13 B x) - 4 a^2 c x^2 (77 A + 39 B x) + 4 a^3 (231 A + 65 B x) - 7 a c^2 x^4 (275 A + 221 B x)\right) - 924 a^{7/2} A \sqrt{c} \sqrt{1 + \frac{a}{c x^2}} x^{3/2} \text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right], -1\right] + 4 a^{7/2} \left(-65 i \sqrt{a} B + 231 A \sqrt{c}\right) \sqrt{1 + \frac{a}{c x^2}} x^{3/2} \text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right], -1\right]\right)\right) \Big/ \left(15015 \sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} c^2 \sqrt{e x} \sqrt{a + c x^2}\right)\right)$$

Problem 443: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 400 leaves, 9 steps):

$$-\frac{4 a^2 e \sqrt{e x} (65 A + 77 B x) \sqrt{a + c x^2}}{5005 c} - \frac{8 a^3 B e^2 x \sqrt{a + c x^2}}{65 c^{3/2} \sqrt{e x} \left(\sqrt{a} + \sqrt{c} x\right)} - \frac{2 a e \sqrt{e x} (39 A + 77 B x) \left(a + c x^2\right)^{3/2}}{3003 c} + \frac{2 A e \sqrt{e x} \left(a + c x^2\right)^{5/2}}{11 c} + \frac{2 B (e x)^{3/2} \left(a + c x^2\right)^{5/2}}{13 c} + \left(8 a^{13/4} B e^2 \sqrt{x} \left(\sqrt{a} + \sqrt{c} x\right) \sqrt{\frac{a + c x^2}{\left(\sqrt{a} + \sqrt{c} x\right)^2}} \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{c^{1/4} \sqrt{x}}{a^{1/4}}\right], \frac{1}{2}\right]\right) \Big/ \left(65 c^{7/4} \sqrt{e x} \sqrt{a + c x^2}\right) - \left(4 a^{11/4} \left(77 \sqrt{a} B + 65 A \sqrt{c}\right) e^2 \sqrt{x} \left(\sqrt{a} + \sqrt{c} x\right) \sqrt{\frac{a + c x^2}{\left(\sqrt{a} + \sqrt{c} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{c^{1/4} \sqrt{x}}{a^{1/4}}\right], \frac{1}{2}\right]\right) \Big/ \left(5005 c^{7/4} \sqrt{e x} \sqrt{a + c x^2}\right)$$

Result (type 4, 270 leaves):

$$-\left(\left(2 e^2 \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} \left(a + c x^2\right) \left(924 a^3 B - 105 c^3 x^5 (13 A + 11 B x) - 4 a^2 c x (195 A + 77 B x) - 5 a c^2 x^3 (507 A + 385 B x)\right) - 924 a^{7/2} B \sqrt{c} \sqrt{1 + \frac{a}{c x^2}} x^{3/2} \text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right], -1\right] + 12 a^3 \left(77 \sqrt{a} B + 65 i A \sqrt{c}\right) \sqrt{c} \sqrt{1 + \frac{a}{c x^2}} x^{3/2} \text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right], -1\right]\right)\right) \Big/ \left(15015 \sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} c^2 \sqrt{e x} \sqrt{a + c x^2}\right)\right)$$

Problem 444: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 366 leaves, 8 steps):

$$\frac{8 a^2 A e x \sqrt{a + c x^2}}{15 \sqrt{c} \sqrt{e x} \left(\sqrt{a} + \sqrt{c} x\right)} - \frac{4 a \sqrt{e x} (15 a B - 77 A c x) \sqrt{a + c x^2}}{1155 c} - \frac{2 \sqrt{e x} (9 a B - 77 A c x) \left(a + c x^2\right)^{3/2}}{693 c} + \frac{2 B \sqrt{e x} \left(a + c x^2\right)^{5/2}}{11 c} - \left(8 a^{9/4} A e \sqrt{x} \left(\sqrt{a} + \sqrt{c} x\right) \sqrt{\frac{a + c x^2}{\left(\sqrt{a} + \sqrt{c} x\right)^2}} \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{c^{1/4} \sqrt{x}}{a^{1/4}}\right], \frac{1}{2}\right]\right) \Big/ \left(15 c^{3/4} \sqrt{e x} \sqrt{a + c x^2}\right) - \left(4 a^{9/4} \left(15 \sqrt{a} B - 77 A \sqrt{c}\right) e \sqrt{x} \left(\sqrt{a} + \sqrt{c} x\right) \sqrt{\frac{a + c x^2}{\left(\sqrt{a} + \sqrt{c} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{c^{1/4} \sqrt{x}}{a^{1/4}}\right], \frac{1}{2}\right]\right) \Big/ \left(1155 c^{5/4} \sqrt{e x} \sqrt{a + c x^2}\right)$$

Result (type 4, 254 leaves):

$$\left(2\,e\left(\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,\left(a+c\,x^2\right)\,\left(35\,c^2\,x^4\,\left(11\,A+9\,B\,x\right)+12\,a^2\,\left(77\,A+15\,B\,x\right)+a\,c\,x^2\,\left(847\,A+585\,B\,x\right)\right)-\right.\right.$$

$$924\,a^{5/2}\,A\,\sqrt{c}\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

$$\left.\left.12\,a^{5/2}\,\left(-15\,i\,\sqrt{a}\,B+77\,A\,\sqrt{c}\right)\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/$$

$$\left(3465\,\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,c\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Problem 445: Result unnecessarily involves imaginary or complex numbers.

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

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

$$\frac{4\,a\,\sqrt{e\,x}\,\left(15\,A+7\,B\,x\right)\,\sqrt{a+c\,x^2}}{105\,e}+\frac{8\,a^2\,B\,x\,\sqrt{a+c\,x^2}}{15\,\sqrt{c}\,\sqrt{e\,x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}+\frac{2\,\sqrt{e\,x}\,\left(9\,A+7\,B\,x\right)\,\left(a+c\,x^2\right)^{3/2}}{63\,e}-$$

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

$$\left(15\,c^{3/4}\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)+\left(4\,a^{7/4}\,\left(7\,\sqrt{a}\,B+15\,A\,\sqrt{c}\right)\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$

$$\left.\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\,\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(105\,c^{3/4}\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 248 leaves):

$$\left(2\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(a+c\,x^2\right)\left(84\,a^2\,B+5\,c^2\,x^3\,(9\,A+7\,B\,x)+a\,c\,x\,(135\,A+77\,B\,x)\right)-\right.$$

$$168\,a^{5/2}\,B\,\sqrt{c}\,\sqrt{1+\frac{a}{c\,x^2}}\;x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

$$\left.24\,a^2\left(7\sqrt{a}\,B+15\,i\,A\sqrt{c}\right)\sqrt{c}\,\sqrt{1+\frac{a}{c\,x^2}}\;x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\Big/$$

$$\left(315\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\;c\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Problem 446: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 341 leaves, 7 steps):

$$\frac{24\,a\,A\sqrt{c}\;x\,\sqrt{a+c\,x^2}}{5\,e\,\sqrt{e\,x}\left(\sqrt{a}+\sqrt{c}\,x\right)}+\frac{4\sqrt{e\,x}\,(5\,a\,B+21\,A\,c\,x)\sqrt{a+c\,x^2}}{35\,e^2}-\frac{2\,(7\,A-B\,x)\left(a+c\,x^2\right)^{3/2}}{7\,e\,\sqrt{e\,x}}-$$

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

$$\left(5\,e\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)+\left(4\,a^{5/4}\left(5\sqrt{a}\,B+21\,A\sqrt{c}\right)\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$

$$\left.\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\;\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(35\,c^{1/4}\,e\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 232 leaves):

$$\left(x\left(2\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(a+c\,x^2\right)\left(c\,x^2\,(7\,A+5\,B\,x)+a\,(49\,A+15\,B\,x)\right)-168\,a^{3/2}\,A\,\sqrt{c}\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+8\,a^{3/2}\left(5\,i\,\sqrt{a}\,B+21\,A\,\sqrt{c}\right)\sqrt{1+\frac{a}{c\,x^2}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(35\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(e\,x)^{3/2}\,\sqrt{a+c\,x^2}\right)$$

Problem 447: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 341 leaves, 7 steps):

$$\frac{24\,a\,B\,\sqrt{c}\,x\,\sqrt{a+c\,x^2}}{5\,e^2\,\sqrt{e\,x}\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{4\,(9\,a\,B-5\,A\,c\,x)\,\sqrt{a+c\,x^2}}{15\,e^2\,\sqrt{e\,x}}-\frac{2\,(5\,A-3\,B\,x)\left(a+c\,x^2\right)^{3/2}}{15\,e\,(e\,x)^{3/2}}-\left(24\,a^{5/4}\,B\,c^{1/4}\,\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(5\,e^2\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)+\left(4\,a^{3/4}\left(9\sqrt{a}\,B+5\,A\,\sqrt{c}\right)c^{1/4}\,\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(15\,e^2\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 233 leaves):

$$\left(x\left(2\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}}\left(a+c x^2\right)\left(-5 a A+21 a B x+5 A c x^2+3 B c x^3\right)-\right.\right.$$

$$72 a^{3/2} B\sqrt{c}\sqrt{1+\frac{a}{c x^2}}\, x^{5/2}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

$$\left.\left.8 a\left(9\sqrt{a}\, B+5\,\mathrm{i} A\sqrt{c}\right)\sqrt{c}\sqrt{1+\frac{a}{c x^2}}\, x^{5/2}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/$$

$$\left(15\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}}\,(e x)^{5/2}\sqrt{a+c x^2}\right)$$

Problem 448: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 339 leaves, 7 steps):

$$-\frac{4 c\left(9 A-5 B x\right)\sqrt{a+c x^2}}{15 e^3\sqrt{e x}}+\frac{24 A c^{3/2} x\sqrt{a+c x^2}}{5 e^3\sqrt{e x}\left(\sqrt{a}+\sqrt{c}\, x\right)}-\frac{2\left(3 A+5 B x\right)\left(a+c x^2\right)^{3/2}}{15 e\,(e x)^{5/2}}-$$

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

$$\left(5 e^3\sqrt{e x}\sqrt{a+c x^2}\right)+\left(4 a^{1/4}\left(5\sqrt{a}\, B+9 A\sqrt{c}\right) c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\, x\right)\right.$$

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

Result (type 4, 233 leaves):

$$\left(x\left(-2\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(a+c x^2\right)\left(-5 c x^2 (3 A+B x)+a (3 A+5 B x)\right)-\right.\right.$$

$$72\sqrt{a}\,A\,c^{3/2}\sqrt{1+\frac{a}{c x^2}}\,x^{7/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+8\sqrt{a}\left(5 i\sqrt{a}\,B+9 A\sqrt{c}\right)$$

$$\left.\left.c\sqrt{1+\frac{a}{c x^2}}\,x^{7/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(15\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(e x)^{7/2}\sqrt{a+c x^2}\right)$$

Problem 449: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 339 leaves, 7 steps):

$$-\frac{4 c\,(5 A+21 B x)\sqrt{a+c x^2}}{35 e^3\,(e x)^{3/2}}+\frac{24 B c^{3/2} x\sqrt{a+c x^2}}{5 e^4\sqrt{e x}\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{2\,(5 A+7 B x)\left(a+c x^2\right)^{3/2}}{35 e\,(e x)^{7/2}}-$$

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

$$\left(5 e^4\sqrt{e x}\sqrt{a+c x^2}\right)+\left(4\left(21\sqrt{a}\,B+5 A\sqrt{c}\right)c^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$

$$\left.\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(35 a^{1/4} e^4\sqrt{e x}\sqrt{a+c x^2}\right)$$

Result (type 4, 238 leaves):

$$\left(2\sqrt{e x}\left(-\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(a+c x^2\right)\left(5 c x^2(3 A-7 B x)+a(5 A+7 B x)\right)-\right.\right.$$

$$84\sqrt{a}\, B c^{3/2}\sqrt{1+\frac{a}{c x^2}}\, x^{9/2}\, \text{EllipticE}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+4\left(21\sqrt{a}\, B+5 i A\sqrt{c}\right)$$

$$\left.\left.c^{3/2}\sqrt{1+\frac{a}{c x^2}}\, x^{9/2}\, \text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(35\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\, e^5 x^4\sqrt{a+c x^2}\right)$$

Problem 450: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 437 leaves, 10 steps):

$$-\frac{8 a^3 e\sqrt{e x}\,(221 A+231 B x)\sqrt{a+c x^2}}{51051 c}-\frac{16 a^4 B e^2 x\sqrt{a+c x^2}}{221 c^{3/2}\sqrt{e x}\left(\sqrt{a}+\sqrt{c}\, x\right)}-$$

$$\frac{4 a^2 e\sqrt{e x}\,(221 A+385 B x)\left(a+c x^2\right)^{3/2}}{51051 c}-\frac{2 a e\sqrt{e x}\,(221 A+495 B x)\left(a+c x^2\right)^{5/2}}{36465 c}+$$

$$\frac{2 A e\sqrt{e x}\left(a+c x^2\right)^{7/2}}{15 c}+\frac{2 B (e x)^{3/2}\left(a+c x^2\right)^{7/2}}{17 c}+$$

$$\left(16 a^{17/4} B e^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\, x\right)\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c}\, x\right)^2}}\, \text{EllipticE}\left[2\, \text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/$$

$$\left(221 c^{7/4}\sqrt{e x}\sqrt{a+c x^2}\right)-\left(8 a^{15/4}\left(231\sqrt{a}\, B+221 A\sqrt{c}\right) e^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\, x\right)\right.$$

$$\left.\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c}\, x\right)^2}}\, \text{EllipticF}\left[2\, \text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(51051 c^{7/4}\sqrt{e x}\sqrt{a+c x^2}\right)$$

Result (type 4, 289 leaves):

$$-\frac{1}{255255\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,c^2\sqrt{e\,x}\,\sqrt{a+c\,x^2}}$$
$$2\,e^2\left(\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,\left(a+c\,x^2\right)\,\left(9240\,a^4\,B-1001\,c^4\,x^7\,(17\,A+15\,B\,x)-40\,a^3\,c\,x\,(221\,A+77\,B\,x)-\right.\right.$$
$$\left.28\,a\,c^3\,x^5\,(1768\,A+1485\,B\,x)-a^2\,c^2\,x^3\,(45747\,A+34265\,B\,x)\right)-$$
$$9240\,a^{9/2}\,B\,\sqrt{c}\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$
$$\left.40\,a^4\left(231\,\sqrt{a}\,B+221\,i\,A\,\sqrt{c}\right)\sqrt{c}\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)$$

Problem 451: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 404 leaves, 9 steps):

$$\frac{16\,a^3\,A\,e\,x\,\sqrt{a+c\,x^2}}{39\,\sqrt{c}\,\sqrt{e\,x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{8\,a^2\,\sqrt{e\,x}\,(13\,a\,B-77\,A\,c\,x)\,\sqrt{a+c\,x^2}}{3003\,c}-$$
$$\frac{4\,a\,\sqrt{e\,x}\,(39\,a\,B-385\,A\,c\,x)\,\left(a+c\,x^2\right)^{3/2}}{9009\,c}-$$
$$\frac{2\,\sqrt{e\,x}\,(13\,a\,B-165\,A\,c\,x)\,\left(a+c\,x^2\right)^{5/2}}{2145\,c}+\frac{2\,B\,\sqrt{e\,x}\,\left(a+c\,x^2\right)^{7/2}}{15\,c}-$$
$$\left(16\,a^{13/4}\,A\,e\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/$$
$$\left(39\,c^{3/4}\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)-\left(8\,a^{13/4}\,\left(13\,\sqrt{a}\,B-77\,A\,\sqrt{c}\right)\,e\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$
$$\left.\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(3003\,c^{5/4}\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 273 leaves):

$$\frac{1}{45045\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,c\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}}$$

$$2\,e\left(\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,\left(a+c\,x^2\right)\,\left(231\,c^3\,x^6\,\left(15\,A+13\,B\,x\right)+120\,a^3\,\left(77\,A+13\,B\,x\right)+\right.\right.$$
$$\left.28\,a\,c^2\,x^4\,\left(385\,A+312\,B\,x\right)+a^2\,c\,x^2\,\left(11935\,A+8073\,B\,x\right)\right)-$$
$$9240\,a^{7/2}\,A\,\sqrt{c}\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$
$$\left.120\,a^{7/2}\,\left(-13\,i\,\sqrt{a}\,B+77\,A\,\sqrt{c}\right)\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)$$

Problem 452: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 369 leaves, 8 steps):

$$\frac{8\,a^2\,\sqrt{e\,x}\,\left(195\,A+77\,B\,x\right)\,\sqrt{a+c\,x^2}}{3003\,e}+\frac{16\,a^3\,B\,x\,\sqrt{a+c\,x^2}}{39\,\sqrt{c}\,\sqrt{e\,x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}+$$
$$\frac{20\,a\,\sqrt{e\,x}\,\left(117\,A+77\,B\,x\right)\,\left(a+c\,x^2\right)^{3/2}}{9009\,e}+\frac{2\,\sqrt{e\,x}\,\left(13\,A+11\,B\,x\right)\,\left(a+c\,x^2\right)^{5/2}}{143\,e}-$$
$$\left(16\,a^{13/4}\,B\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\,\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\,\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/$$
$$\left(39\,c^{3/4}\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)+\left(8\,a^{11/4}\,\left(77\,\sqrt{a}\,B+195\,A\,\sqrt{c}\right)\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$
$$\left.\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\,\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(3003\,c^{3/4}\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 267 leaves):

$$\left(2\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(a+c x^2\right)\left(1848 a^3 B+63 c^3 x^5 (13 A+11 B x)+4 a c^2 x^3 (702 A+539 B x)+a^2 c x (4329 A+2387 B x)\right)-3696 a^{7/2} B \sqrt{c}\sqrt{1+\frac{a}{c x^2}}\, x^{3/2}\, \text{EllipticE}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+48 a^3 \left(77\sqrt{a} B+195 i A\sqrt{c}\right)\sqrt{c}\sqrt{1+\frac{a}{c x^2}}\, x^{3/2}\, \text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\Big/\left(9009\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\, c\sqrt{e x}\sqrt{a+c x^2}\right)$$

Problem 453: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 379 leaves, 8 steps):

$$\frac{16 a^2 A\sqrt{c}\, x\sqrt{a+c x^2}}{3 e\sqrt{e x}\left(\sqrt{a}+\sqrt{c}\, x\right)}+\frac{8 a\sqrt{e x}\,(15 a B+77 A c x)\sqrt{a+c x^2}}{231 e^2}+\frac{20\sqrt{e x}\,(9 a B+77 A c x)\left(a+c x^2\right)^{3/2}}{693 e^2}-\frac{2 (11 A-B x)\left(a+c x^2\right)^{5/2}}{11 e\sqrt{e x}}-\left(16 a^{9/4} A c^{1/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\, x\right)\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c}\, x\right)^2}}\, \text{EllipticE}\left[2\, \text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(3 e\sqrt{e x}\sqrt{a+c x^2}\right)+\left(8 a^{9/4}\left(15\sqrt{a} B+77 A\sqrt{c}\right)\sqrt{x}\left(\sqrt{a}+\sqrt{c}\, x\right)\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c}\, x\right)^2}}\, \text{EllipticF}\left[2\, \text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(231 c^{1/4} e\sqrt{e x}\sqrt{a+c x^2}\right)$$

Result (type 4, 253 leaves):

$$\left(x\left(2\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(a+c x^2\right)\left(7 c^2 x^4 (11 A+9 B x)+4 a c x^2 (77 A+54 B x)+3 a^2 (385 A+111 B x)\right)-\right.\right.$$

$$3696\, a^{5/2} A \sqrt{c}\sqrt{1+\frac{a}{c x^2}}\, x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

$$\left.\left.48\, a^{5/2}\left(15\, i\sqrt{a}\, B+77 A\sqrt{c}\right)\sqrt{1+\frac{a}{c x^2}}\, x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/$$

$$\left(693\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(e x)^{3/2}\sqrt{a+c x^2}\right)$$

Problem 454: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 378 leaves, 8 steps):

$$\frac{8 a c\sqrt{e x}\,(5 A+7 B x)\sqrt{a+c x^2}}{21 e^3}+\frac{16 a^2 B\sqrt{c}\, x\sqrt{a+c x^2}}{3 e^2\sqrt{e x}\left(\sqrt{a}+\sqrt{c}\, x\right)}-$$

$$\frac{20 (7 a B-3 A c x)\left(a+c x^2\right)^{3/2}}{63 e^2\sqrt{e x}}-\frac{2 (3 A-B x)\left(a+c x^2\right)^{5/2}}{9 e\,(e x)^{3/2}}-$$

$$\left(16 a^{9/4} B c^{1/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\, x\right)\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c}\, x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/$$

$$\left(3 e^2\sqrt{e x}\sqrt{a+c x^2}\right)+\left(8 a^{7/4}\left(7\sqrt{a}\, B+5 A\sqrt{c}\right) c^{1/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\, x\right)\right.$$

$$\left.\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c}\, x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(21 e^2\sqrt{e x}\sqrt{a+c x^2}\right)$$

Result (type 4, 253 leaves):

$$\left(x\left(2\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(a+c x^2\right)\left(-21 a^2 (A-5 B x)+c^2 x^4 (9 A+7 B x)+4 a c x^2 (12 A+7 B x)\right)-336 a^{5/2} B\sqrt{c}\sqrt{1+\frac{a}{c x^2}}\, x^{5/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+48 a^2\left(7\sqrt{a}\, B+5 i A\sqrt{c}\right)\sqrt{c}\sqrt{1+\frac{a}{c x^2}}\, x^{5/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\bigg/\left(63\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(e x)^{5/2}\sqrt{a+c x^2}\right)$$

Problem 455: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 376 leaves, 8 steps):

$$-\frac{8 a c (63 A-25 B x)\sqrt{a+c x^2}}{105 e^3\sqrt{e x}}+\frac{48 a A c^{3/2} x\sqrt{a+c x^2}}{5 e^3\sqrt{e x}\left(\sqrt{a}+\sqrt{c}\, x\right)}-\frac{4 (25 a B-21 A c x)\left(a+c x^2\right)^{3/2}}{105 e^2 (e x)^{3/2}}-\frac{2 (7 A-5 B x)\left(a+c x^2\right)^{5/2}}{35 e (e x)^{5/2}}-\left(48 a^{5/4} A c^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\, x\right)\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c}\, x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\bigg/\left(5 e^3\sqrt{e x}\sqrt{a+c x^2}\right)+\left(8 a^{5/4}\left(25\sqrt{a}\, B+63 A\sqrt{c}\right) c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\, x\right)\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c}\, x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\bigg/\left(105 e^3\sqrt{e x}\sqrt{a+c x^2}\right)$$

Result (type 4, 254 leaves):

$$\left(x\left(-2\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(a+c\,x^2\right)\left(7\,a^2\left(3\,A+5\,B\,x\right)-3\,c^2\,x^4\left(7\,A+5\,B\,x\right)-4\,a\,c\,x^2\left(63\,A+20\,B\,x\right)\right)-\right.\right.$$

$$1008\,a^{3/2}\,A\,c^{3/2}\sqrt{1+\frac{a}{c\,x^2}}\;x^{7/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

$$\left.\left.16\,a^{3/2}\left(25\,i\sqrt{a}\,B+63\,A\sqrt{c}\right)c\sqrt{1+\frac{a}{c\,x^2}}\;x^{7/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/$$

$$\left(105\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,\left(e\,x\right)^{7/2}\sqrt{a+c\,x^2}\right)$$

Problem 456: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(A+B\,x\right)\left(a+c\,x^2\right)^{5/2}}{\left(e\,x\right)^{9/2}}\,dx$$

Optimal (type 4, 377 leaves, 8 steps):

$$\frac{48\,a\,B\,c^{3/2}\,x\sqrt{a+c\,x^2}}{5\,e^4\sqrt{e\,x}\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{8\,c\left(63\,a\,B-25\,A\,c\,x\right)\sqrt{a+c\,x^2}}{105\,e^4\sqrt{e\,x}}-$$

$$\frac{4\left(21\,a\,B+25\,A\,c\,x\right)\left(a+c\,x^2\right)^{3/2}}{105\,e^2\left(e\,x\right)^{5/2}}-\frac{2\left(5\,A-7\,B\,x\right)\left(a+c\,x^2\right)^{5/2}}{35\,e\left(e\,x\right)^{7/2}}-$$

$$\left(48\,a^{5/4}\,B\,c^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\;\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/$$

$$\left(5\,e^4\sqrt{e\,x}\sqrt{a+c\,x^2}\right)+\left(8\,a^{3/4}\left(63\sqrt{a}\,B+25\,A\sqrt{c}\right)c^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$

$$\left.\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\;\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(105\,e^4\sqrt{e\,x}\sqrt{a+c\,x^2}\right)$$

Result (type 4, 259 leaves):

$$\left(2\sqrt{e\,x}\left(-\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,\left(a+c\,x^2\right)\left(4\,a\,c\,x^2\,\left(20\,A-63\,B\,x\right)-7\,c^2\,x^4\,\left(5\,A+3\,B\,x\right)+3\,a^2\,\left(5\,A+7\,B\,x\right)\right)-\right.\right.$$

$$504\,a^{3/2}\,B\,c^{3/2}\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{9/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

$$\left.\left.8\,a\left(63\sqrt{a}\,B+25\,i\,A\sqrt{c}\right)c^{3/2}\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{9/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/$$

$$\left(105\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,e^5\,x^4\,\sqrt{a+c\,x^2}\right)$$

Problem 457: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(A+B\,x)\,\left(a+c\,x^2\right)^{5/2}}{(e\,x)^{11/2}}\,dx$$

Optimal (type 4, 375 leaves, 8 steps):

$$-\frac{8\,c^2\,(7\,A-5\,B\,x)\,\sqrt{a+c\,x^2}}{21\,e^5\,\sqrt{e\,x}}+\frac{16\,A\,c^{5/2}\,x\,\sqrt{a+c\,x^2}}{3\,e^5\,\sqrt{e\,x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}-$$

$$\frac{4\,c\,(7\,A+15\,B\,x)\,\left(a+c\,x^2\right)^{3/2}}{63\,e^3\,(e\,x)^{5/2}}-\frac{2\,(7\,A+9\,B\,x)\,\left(a+c\,x^2\right)^{5/2}}{63\,e\,(e\,x)^{9/2}}-$$

$$\left(16\,a^{1/4}\,A\,c^{9/4}\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/$$

$$\left(3\,e^5\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)+\left(8\,a^{1/4}\,\left(5\sqrt{a}\,B+7\,A\sqrt{c}\right)c^{7/4}\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$

$$\left.\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(21\,e^5\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 259 leaves):

$$\left(\sqrt{e\,x}\,\left(-2\,\sqrt{\frac{\mathrm{i}\,\sqrt{a}}{\sqrt{c}}}\,\left(a+c\,x^2\right)\,\left(-21\,c^2\,x^4\,\left(3\,A+B\,x\right)+a^2\,\left(7\,A+9\,B\,x\right)+4\,a\,c\,x^2\,\left(7\,A+12\,B\,x\right)\right)-\right.\right.$$

$$336\,\sqrt{a}\,A\,c^{5/2}\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{11/2}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{\mathrm{i}\,\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

$$\left.\left.48\,\sqrt{a}\,\left(5\,\mathrm{i}\,\sqrt{a}\,B+7\,A\,\sqrt{c}\right)\,c^2\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{11/2}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{\mathrm{i}\,\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/$$

$$\left(63\,\sqrt{\frac{\mathrm{i}\,\sqrt{a}}{\sqrt{c}}}\,e^6\,x^5\,\sqrt{a+c\,x^2}\right)$$

Problem 458: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 388 leaves, 9 steps):

$$-\frac{10\,a\,A\,e^3\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}}{21\,c^2}-\frac{14\,a\,B\,e^2\,(e\,x)^{3/2}\,\sqrt{a+c\,x^2}}{45\,c^2}+$$

$$\frac{2\,A\,e\,(e\,x)^{5/2}\,\sqrt{a+c\,x^2}}{7\,c}+\frac{2\,B\,(e\,x)^{7/2}\,\sqrt{a+c\,x^2}}{9\,c}+\frac{14\,a^2\,B\,e^4\,x\,\sqrt{a+c\,x^2}}{15\,c^{5/2}\,\sqrt{e\,x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}-$$

$$\left(14\,a^{9/4}\,B\,e^4\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\,\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\,\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/$$

$$\left(15\,c^{11/4}\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)+\left(a^{7/4}\,\left(49\,\sqrt{a}\,B+25\,A\,\sqrt{c}\right)\,e^4\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$

$$\left.\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\,\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(105\,c^{11/4}\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 251 leaves):

$$\left(2 e^4 \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} \left(a+c x^2\right) \left(147 a^2 B+5 c^2 x^3 (9 A+7 B x)-a c x (75 A+49 B x)\right)-\right.\right.$$

$$147 a^{5/2} B \sqrt{c} \sqrt{1+\frac{a}{c x^2}} x^{3/2} \text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

$$\left.\left.3 a^2 \left(49 \sqrt{a} B+25 i A \sqrt{c}\right) \sqrt{c} \sqrt{1+\frac{a}{c x^2}} x^{3/2} \text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/$$

$$\left(315 \sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} c^3 \sqrt{e x} \sqrt{a+c x^2}\right)$$

Problem 459: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 356 leaves, 8 steps):

$$-\frac{10 a B e^2 \sqrt{e x} \sqrt{a+c x^2}}{21 c^2}+\frac{2 A e (e x)^{3/2} \sqrt{a+c x^2}}{5 c}+$$

$$\frac{2 B (e x)^{5/2} \sqrt{a+c x^2}}{7 c}-\frac{6 a A e^3 x \sqrt{a+c x^2}}{5 c^{3/2} \sqrt{e x} \left(\sqrt{a}+\sqrt{c} x\right)}+$$

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

$$\left(5 c^{7/4} \sqrt{e x} \sqrt{a+c x^2}\right)+\left(a^{5/4} \left(25 \sqrt{a} B-63 A \sqrt{c}\right) e^3 \sqrt{x} \left(\sqrt{a}+\sqrt{c} x\right)\right.$$

$$\left.\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{c^{1/4} \sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(105 c^{9/4} \sqrt{e x} \sqrt{a+c x^2}\right)$$

Result (type 4, 236 leaves):

$$-\left(\left(2 e^3 \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} \left(a+c x^2\right) \left(-3 c x^2 (7 A+5 B x)+a (63 A+25 B x)\right)-\right.\right.\right.$$

$$63 a^{3/2} A \sqrt{c} \sqrt{1+\frac{a}{c x^2}} x^{3/2} \text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

$$\left.\left. a^{3/2} \left(-25 i \sqrt{a} B+63 A \sqrt{c}\right) \sqrt{1+\frac{a}{c x^2}} x^{3/2} \text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/$$

$$\left.\left(105 \sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} c^2 \sqrt{e x} \sqrt{a+c x^2}\right)\right)$$

Problem 460: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 326 leaves, 7 steps):

$$\frac{2 A e \sqrt{e x} \sqrt{a+c x^2}}{3 c}+\frac{2 B (e x)^{3/2} \sqrt{a+c x^2}}{5 c}-\frac{6 a B e^2 x \sqrt{a+c x^2}}{5 c^{3/2} \sqrt{e x} \left(\sqrt{a}+\sqrt{c} x\right)}+$$

$$\left(6 a^{5/4} B e^2 \sqrt{x} \left(\sqrt{a}+\sqrt{c} x\right) \sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c} x\right)^2}} \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{c^{1/4} \sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/$$

$$\left(5 c^{7/4} \sqrt{e x} \sqrt{a+c x^2}\right)-\left(a^{3/4} \left(9 \sqrt{a} B+5 A \sqrt{c}\right) e^2 \sqrt{x} \left(\sqrt{a}+\sqrt{c} x\right)\right.$$

$$\left.\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{c^{1/4} \sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(15 c^{7/4} \sqrt{e x} \sqrt{a+c x^2}\right)$$

Result (type 4, 229 leaves):

$$-\left(\left(2 e^2 \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} \left(a+c x^2\right) \left(9 a B-c x \left(5 A+3 B x\right)\right)-\right.\right.\right.$$

$$9 a^{3/2} B \sqrt{c} \sqrt{1+\frac{a}{c x^2}} x^{3/2} \text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

$$\left.\left.a \left(9 \sqrt{a} B+5 i A \sqrt{c}\right) \sqrt{c} \sqrt{1+\frac{a}{c x^2}} x^{3/2} \text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/$$

$$\left.\left(15 \sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} c^2 \sqrt{e x} \sqrt{a+c x^2}\right)\right)$$

Problem 461: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\sqrt{e x} (A+B x)}{\sqrt{a+c x^2}} \, dx$$

Optimal (type 4, 287 leaves, 6 steps):

$$\frac{2 B \sqrt{e x} \sqrt{a+c x^2}}{3 c}+\frac{2 A e x \sqrt{a+c x^2}}{\sqrt{c} \sqrt{e x} \left(\sqrt{a}+\sqrt{c} x\right)}-$$

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

$$\left(c^{3/4} \sqrt{e x} \sqrt{a+c x^2}\right)-\left(a^{1/4} \left(\sqrt{a} B-3 A \sqrt{c}\right) e \sqrt{x} \left(\sqrt{a}+\sqrt{c} x\right)\right.$$

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

Result (type 4, 216 leaves):

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

Problem 462: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{A + B x}{\sqrt{e x} \sqrt{a + c x^2}} \, dx$$

Optimal (type 4, 253 leaves, 5 steps):

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

Result (type 4, 207 leaves):

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

Problem 463: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 293 leaves, 6 steps):

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

Result (type 4, 152 leaves):

$$\left(2\sqrt{1+\frac{a}{c\,x^2}}\;x^{5/2}\left(-A\sqrt{c}\;\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{\mathbb{i}\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+\right.\right.$$

$$\left.\left.\left(\mathbb{i}\sqrt{a}\;B+A\sqrt{c}\right)\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{\mathbb{i}\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Bigg/\left(\sqrt{a}\sqrt{\frac{\mathbb{i}\sqrt{a}}{\sqrt{c}}}\;(e\,x)^{3/2}\sqrt{a+c\,x^2}\right)$$

Problem 464: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 327 leaves, 7 steps):

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

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

$$\left(a^{3/4}\,e^2\sqrt{e\,x}\sqrt{a+c\,x^2}\right)+$$

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

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

Result (type 4, 212 leaves):

$$\left(x\left(-2A\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(a+c x^2\right)-6\sqrt{a}\,B\sqrt{c}\,\sqrt{1+\frac{a}{c x^2}}\,x^{5/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+\right.\right.$$

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

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

Problem 465: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 363 leaves, 8 steps):

$$-\frac{2A\sqrt{a+c x^2}}{5 a e\,(e x)^{5/2}}-\frac{2B\sqrt{a+c x^2}}{3 a e^2\,(e x)^{3/2}}+\frac{6 A c\sqrt{a+c x^2}}{5 a^2 e^3\sqrt{e x}}-\frac{6 A c^{3/2} x\sqrt{a+c x^2}}{5 a^2 e^3\sqrt{e x}\left(\sqrt{a}+\sqrt{c}\,x\right)}+$$

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

$$\left(5 a^{7/4} e^3\sqrt{e x}\sqrt{a+c x^2}\right)-\left(\left(5\sqrt{a}\,B+9A\sqrt{c}\right)c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$

$$\left.\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(15 a^{7/4} e^3\sqrt{e x}\sqrt{a+c x^2}\right)$$

Result (type 4, 217 leaves):

$$\left(x\left(-2\sqrt{a}\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(3A+5Bx)\left(a+cx^2\right)+18Ac^{3/2}\sqrt{1+\frac{a}{cx^2}}\,x^{7/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]-2\left(5i\sqrt{a}\,B+9A\sqrt{c}\right)c\sqrt{1+\frac{a}{cx^2}}\,x^{7/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(15a^{3/2}\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(ex)^{7/2}\sqrt{a+cx^2}\right)$$

Problem 466: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(ex)^{7/2}(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$$

Optimal (type 4, 360 leaves, 8 steps):

$$-\frac{e\,(ex)^{5/2}(A+Bx)}{c\sqrt{a+cx^2}}+\frac{5Ae^3\sqrt{ex}\,\sqrt{a+cx^2}}{3c^2}+\frac{7Be^2(ex)^{3/2}\sqrt{a+cx^2}}{5c^2}-\frac{21aBe^4x\sqrt{a+cx^2}}{5c^{5/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}+\left(21a^{5/4}Be^4\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(5c^{11/4}\sqrt{ex}\,\sqrt{a+cx^2}\right)-\left(a^{3/4}\left(63\sqrt{a}\,B+25A\sqrt{c}\right)e^4\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(30c^{11/4}\sqrt{ex}\,\sqrt{a+cx^2}\right)$$

Result (type 4, 240 leaves):

$$-\left(\left(e^4\left(\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(63a^2B-2c^2x^3(5A+3Bx)+acx(-25A+42Bx)\right)-\right.\right.\right.$$

$$63a^{3/2}B\sqrt{c}\sqrt{1+\frac{a}{cx^2}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

$$\left.\left.a\left(63\sqrt{a}B+25iA\sqrt{c}\right)\sqrt{c}\sqrt{1+\frac{a}{cx^2}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/$$

$$\left.\left(15\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,c^3\sqrt{ex}\sqrt{a+cx^2}\right)\right)$$

Problem 467: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(ex)^{5/2}(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$$

Optimal (type 4, 326 leaves, 7 steps):

$$-\frac{e(ex)^{3/2}(A+Bx)}{c\sqrt{a+cx^2}}+\frac{5Be^2\sqrt{ex}\sqrt{a+cx^2}}{3c^2}+\frac{3Ae^3x\sqrt{a+cx^2}}{c^{3/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}-$$

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

$$\left(c^{7/4}\sqrt{ex}\sqrt{a+cx^2}\right)-\left(a^{1/4}\left(5\sqrt{a}B-9A\sqrt{c}\right)e^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$

$$\left.\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(6c^{9/4}\sqrt{ex}\sqrt{a+cx^2}\right)$$

Result (type 4, 228 leaves):

$$\left(e^3\left(\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}}\left(9\,a\,A+5\,a\,B\,x+6\,A\,c\,x^2+2\,B\,c\,x^3\right)-\right.\right.$$

$$9\sqrt{a}\,A\sqrt{c}\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{3/2}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+\sqrt{a}\,\left(-5\,\mathrm{i}\sqrt{a}\,B+9\,A\sqrt{c}\right)$$

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

Problem 468: Result unnecessarily involves imaginary or complex numbers.

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

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

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

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

$$\left(c^{7/4}\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)+$$

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

$$\left(2\,a^{1/4}\,c^{7/4}\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 217 leaves):

$$\left(e^2\left(\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(3\,a\,B+c\,x\,(-A+2\,B\,x))-\right.\right.$$

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

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

Problem 469: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 298 leaves, 6 steps):

$$-\frac{\sqrt{e\,x}\,(a\,B-A\,c\,x)}{a\,c\,\sqrt{a+c\,x^2}}-\frac{A\,e\,x\,\sqrt{a+c\,x^2}}{a\,\sqrt{c}\,\sqrt{e\,x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}+$$

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

$$\left(a^{3/4}\,c^{3/4}\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)+$$

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

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

Result (type 4, 204 leaves):

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

Problem 470: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 290 leaves, 6 steps):

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

Result (type 4, 211 leaves):

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

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

$$\left(a\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,c\sqrt{e x}\,\sqrt{a+c x^2}\right)$$

Problem 471: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 327 leaves, 7 steps):

$$\frac{A+B x}{a e\sqrt{e x}\,\sqrt{a+c x^2}}-\frac{3 A\sqrt{a+c x^2}}{a^2 e\sqrt{e x}}+\frac{3 A\sqrt{c}\,x\sqrt{a+c x^2}}{a^2 e\sqrt{e x}\left(\sqrt{a}+\sqrt{c}\,x\right)}-$$

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

$$\left(a^{7/4} e\sqrt{e x}\,\sqrt{a+c x^2}\right)+$$

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

$$\left(2 a^{7/4} c^{1/4} e\sqrt{e x}\,\sqrt{a+c x^2}\right)$$

Result (type 4, 201 leaves):

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

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

$$\left(a^{3/2}\,\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}}\,(e\,x)^{3/2}\,\sqrt{a+c\,x^2}\right)$$

Problem 472: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 357 leaves, 8 steps):

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

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

$$\left(a^{7/4}\,e^2\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)+\left(\left(9\,\sqrt{a}\,B-5\,A\,\sqrt{c}\right)c^{1/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$

$$\left.\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Bigg/\left(6\,a^{9/4}\,e^2\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 219 leaves):

$$\left(x\left(\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(-2aA+3aBx-5Acx^2\right)-\right.\right.$$

$$9\sqrt{a}\,B\sqrt{c}\sqrt{1+\frac{a}{cx^2}}\,x^{5/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

$$\left.\left.\left(9\sqrt{a}\,B-5iA\sqrt{c}\right)\sqrt{c}\sqrt{1+\frac{a}{cx^2}}\,x^{5/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/$$

$$\left(3a^2\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(ex)^{5/2}\sqrt{a+cx^2}\right)$$

Problem 473: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{A+Bx}{(ex)^{7/2}\left(a+cx^2\right)^{3/2}}\,dx$$

Optimal (type 4, 393 leaves, 9 steps):

$$\frac{A+Bx}{ae\,(ex)^{5/2}\sqrt{a+cx^2}}-\frac{7A\sqrt{a+cx^2}}{5a^2e\,(ex)^{5/2}}-$$

$$\frac{5B\sqrt{a+cx^2}}{3a^2e^2\,(ex)^{3/2}}+\frac{21Ac\sqrt{a+cx^2}}{5a^3e^3\sqrt{ex}}-\frac{21Ac^{3/2}x\sqrt{a+cx^2}}{5a^3e^3\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}+$$

$$\left(21Ac^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/$$

$$\left(5a^{11/4}e^3\sqrt{ex}\sqrt{a+cx^2}\right)-\left(\left(25\sqrt{a}\,B+63A\sqrt{c}\right)c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$

$$\left.\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(30a^{11/4}e^3\sqrt{ex}\sqrt{a+cx^2}\right)$$

Result (type 4, 226 leaves):

$$\left(x\left(-\sqrt{a}\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(6\,a\,A+10\,a\,B\,x+21\,A\,c\,x^2+25\,B\,c\,x^3\right)+63\,A\,c^{3/2}\sqrt{1+\frac{a}{c\,x^2}}\,x^{7/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]-\left(25\,i\sqrt{a}\,B+63\,A\sqrt{c}\right)c\sqrt{1+\frac{a}{c\,x^2}}\,x^{7/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(15\,a^{5/2}\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(e\,x)^{7/2}\sqrt{a+c\,x^2}\right)$$

Problem 474: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(e\,x)^{13/2}\,(A+B\,x)}{\left(a+c\,x^2\right)^{5/2}}\,dx$$

Optimal (type 4, 428 leaves, 10 steps):

$$-\frac{e\,(e\,x)^{11/2}\,(A+B\,x)}{3\,c\left(a+c\,x^2\right)^{3/2}}-\frac{e^3\,(e\,x)^{7/2}\,(11\,A+13\,B\,x)}{6\,c^2\sqrt{a+c\,x^2}}-\frac{65\,a\,B\,e^6\sqrt{e\,x}\,\sqrt{a+c\,x^2}}{14\,c^4}+\frac{77\,A\,e^5\,(e\,x)^{3/2}\sqrt{a+c\,x^2}}{30\,c^3}+\frac{39\,B\,e^4\,(e\,x)^{5/2}\sqrt{a+c\,x^2}}{14\,c^3}-\frac{77\,a\,A\,e^7\,x\sqrt{a+c\,x^2}}{10\,c^{7/2}\sqrt{e\,x}\left(\sqrt{a}+\sqrt{c}\,x\right)}+\left(77\,a^{5/4}\,A\,e^7\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(10\,c^{15/4}\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)+\left(a^{5/4}\left(325\sqrt{a}\,B-539\,A\sqrt{c}\right)e^7\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(140\,c^{17/4}\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 284 leaves):

$$\frac{1}{210\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,c^4\sqrt{e\,x}\,\left(a+c\,x^2\right)^{3/2}}$$

$$e^7\left(-\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(-12\,c^3\,x^6\,(7\,A+5\,B\,x)+35\,a^2\,c\,x^2\,(77\,A+39\,B\,x)+4\,a\,c^2\,x^4\,(231\,A+65\,B\,x)+\right.\right.$$

$$\left.3\,a^3\,(539\,A+325\,B\,x)\right)+1617\,a^{3/2}\,A\,\sqrt{c}\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{3/2}\,\left(a+c\,x^2\right)$$

$$\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]-3\,a^{3/2}\,\left(-325\,i\,\sqrt{a}\,B+539\,A\,\sqrt{c}\right)$$

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

Problem 475: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(e\,x)^{11/2}\,(A+B\,x)}{\left(a+c\,x^2\right)^{5/2}}\,dx$$

Optimal (type 4, 398 leaves, 9 steps):

$$-\frac{e\,(e\,x)^{9/2}\,(A+B\,x)}{3\,c\,\left(a+c\,x^2\right)^{3/2}}-\frac{e^3\,(e\,x)^{5/2}\,(9\,A+11\,B\,x)}{6\,c^2\,\sqrt{a+c\,x^2}}+$$

$$\frac{5\,A\,e^5\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}}{2\,c^3}+\frac{77\,B\,e^4\,(e\,x)^{3/2}\,\sqrt{a+c\,x^2}}{30\,c^3}-\frac{77\,a\,B\,e^6\,x\,\sqrt{a+c\,x^2}}{10\,c^{7/2}\,\sqrt{e\,x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}+$$

$$\left(77\,a^{5/4}\,B\,e^6\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\,\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/$$

$$\left(10\,c^{15/4}\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)-\left(a^{3/4}\,\left(77\,\sqrt{a}\,B+25\,A\,\sqrt{c}\right)\,e^6\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$

$$\left.\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\,\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(20\,c^{15/4}\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 277 leaves):

$$\left(e^6 \left(\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(-231 a^3 B+5 a^2 c x (15 A-77 B x)+3 a c^2 x^3 (35 A-44 B x)+4 c^3 x^5 (5 A+3 B x)\right)+\right.\right.$$

$$231 a^{3/2} B \sqrt{c} \sqrt{1+\frac{a}{c x^2}}\, x^{3/2} \left(a+c x^2\right) \text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]-$$

$$3 i a \left(-77 i \sqrt{a}\, B+25 A\sqrt{c}\right)\sqrt{c}\sqrt{1+\frac{a}{c x^2}}\, x^{3/2}\left(a+c x^2\right)$$

$$\left.\left.\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Bigg/\left(30\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\, c^4\sqrt{e x}\left(a+c x^2\right)^{3/2}\right)$$

Problem 476: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(e x)^{9/2} (A+B x)}{\left(a+c x^2\right)^{5/2}}\, dx$$

Optimal (type 4, 368 leaves, 8 steps):

$$-\frac{e (e x)^{7/2} (A+B x)}{3 c \left(a+c x^2\right)^{3/2}}-\frac{e^3 (e x)^{3/2} (7 A+9 B x)}{6 c^2 \sqrt{a+c x^2}}+\frac{5 B e^4 \sqrt{e x}\sqrt{a+c x^2}}{2 c^3}+\frac{7 A e^5 x\sqrt{a+c x^2}}{2 c^{5/2}\sqrt{e x}\left(\sqrt{a}+\sqrt{c}\, x\right)}-$$

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

$$\left(2 c^{11/4}\sqrt{e x}\sqrt{a+c x^2}\right)-\left(a^{1/4}\left(5\sqrt{a}\, B-7 A\sqrt{c}\right) e^5\sqrt{x}\left(\sqrt{a}+\sqrt{c}\, x\right)\right.$$

$$\left.\sqrt{\frac{a+c x^2}{\left(\sqrt{a}+\sqrt{c}\, x\right)^2}}\, \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Bigg/\left(4 c^{13/4}\sqrt{e x}\sqrt{a+c x^2}\right)$$

Result (type 4, 263 leaves):

$$\left(e^5 \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} \left(4 c^2 x^4 (3 A + B x) + 7 a c x^2 (5 A + 3 B x) + 3 a^2 (7 A + 5 B x)\right) - 21 \sqrt{a} A \sqrt{c} \sqrt{1 + \frac{a}{c x^2}} x^{3/2} (a + c x^2) \text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right], -1\right] + 3 \sqrt{a} \left(-5 i \sqrt{a} B + 7 A \sqrt{c}\right) \sqrt{1 + \frac{a}{c x^2}} x^{3/2} (a + c x^2) \text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right], -1\right]\right)\right) \Bigg/ \left(6 \sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} c^3 \sqrt{e x} (a + c x^2)^{3/2}\right)$$

Problem 477: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(e x)^{7/2} (A + B x)}{(a + c x^2)^{5/2}} \, dx$$

Optimal (type 4, 339 leaves, 7 steps):

$$-\frac{e (e x)^{5/2} (A + B x)}{3 c (a + c x^2)^{3/2}} - \frac{e^3 \sqrt{e x} (5 A + 7 B x)}{6 c^2 \sqrt{a + c x^2}} + \frac{7 B e^4 x \sqrt{a + c x^2}}{2 c^{5/2} \sqrt{e x} \left(\sqrt{a} + \sqrt{c} x\right)} - \left(7 a^{1/4} B e^4 \sqrt{x} \left(\sqrt{a} + \sqrt{c} x\right) \sqrt{\frac{a + c x^2}{\left(\sqrt{a} + \sqrt{c} x\right)^2}} \text{EllipticE}\left[2 \text{ArcTan}\left[\frac{c^{1/4} \sqrt{x}}{a^{1/4}}\right], \frac{1}{2}\right]\right) \Bigg/ \left(2 c^{11/4} \sqrt{e x} \sqrt{a + c x^2}\right) + \left(\left(21 \sqrt{a} B + 5 A \sqrt{c}\right) e^4 \sqrt{x} \left(\sqrt{a} + \sqrt{c} x\right) \sqrt{\frac{a + c x^2}{\left(\sqrt{a} + \sqrt{c} x\right)^2}} \text{EllipticF}\left[2 \text{ArcTan}\left[\frac{c^{1/4} \sqrt{x}}{a^{1/4}}\right], \frac{1}{2}\right]\right) \Bigg/ \left(12 a^{1/4} c^{11/4} \sqrt{e x} \sqrt{a + c x^2}\right)$$

Result (type 4, 251 leaves):

$$\left(e^4 \left(\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} \left(21 a^2 B - 5 a c x (A - 7 B x) + c^2 x^3 (-7 A + 12 B x)\right) - 21 \sqrt{a} B \sqrt{c} \sqrt{1 + \frac{a}{c x^2}} x^{3/2} (a + c x^2) \text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right], -1\right] + \left(21 \sqrt{a} B + 5 i A \sqrt{c}\right) \sqrt{c} \sqrt{1 + \frac{a}{c x^2}} x^{3/2} (a + c x^2) \text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right], -1\right]\right)\right) \Big/ \left(6 \sqrt{\frac{i \sqrt{a}}{\sqrt{c}}} c^3 \sqrt{e x} (a + c x^2)^{3/2}\right)$$

Problem 478: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(e x)^{5/2} (A + B x)}{(a + c x^2)^{5/2}} \, dx$$

Optimal (type 4, 347 leaves, 7 steps):

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

Result (type 4, 243 leaves):

$$\left(i\, e^3 \left(-\sqrt{a}\, \sqrt{\frac{i \sqrt{a}}{\sqrt{c}}}\, \left(a\, (3\, A + 5\, B\, x) + c\, x^2\, (5\, A + 7\, B\, x)\right) + \right.\right.$$

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

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

$$\left(6\, \left(\frac{i \sqrt{a}}{\sqrt{c}}\right)^{3/2}\, c^{5/2}\, \sqrt{e\, x}\, \left(a + c\, x^2\right)^{3/2}\right)$$

Problem 479: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 341 leaves, 7 steps):

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

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

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

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

$$\left(12\, a^{5/4}\, c^{7/4}\, \sqrt{e\, x}\, \sqrt{a + c\, x^2}\right)$$

Result (type 4, 249 leaves):

$$\left(e^2\left(\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(-3a^2B+Ac^2x^3-acx(A+5Bx)\right)+3\sqrt{a}\,B\sqrt{c}\sqrt{1+\frac{a}{cx^2}}\,x^{3/2}\left(a+cx^2\right)\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+i\left(3i\sqrt{a}\,B+A\sqrt{c}\right)\sqrt{c}\sqrt{1+\frac{a}{cx^2}}\,x^{3/2}\left(a+cx^2\right)\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/\left(6a\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,c^2\sqrt{ex}\left(a+cx^2\right)^{3/2}\right)$$

Problem 480: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\sqrt{ex}\,(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$$

Optimal (type 4, 342 leaves, 7 steps):

$$-\frac{\sqrt{ex}\,(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}+\frac{\sqrt{ex}\,(aB+3Acx)}{6a^2c\sqrt{a+cx^2}}-\frac{Aex\sqrt{a+cx^2}}{2a^2\sqrt{c}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}+\left(Ae\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(2a^{7/4}c^{3/4}\sqrt{ex}\sqrt{a+cx^2}\right)+\left(\left(\sqrt{a}\,B-3A\sqrt{c}\right)e\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(12a^{7/4}c^{5/4}\sqrt{ex}\sqrt{a+cx^2}\right)$$

Result (type 4, 239 leaves):

$$\left(e\left(-\sqrt{a}\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(c x^2 (A-B x)+a (3 A+B x)\right)+\right.\right.$$

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

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

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

Problem 481: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 335 leaves, 7 steps):

$$\frac{\sqrt{e x}\,(A+B x)}{3 a e\left(a+c x^2\right)^{3/2}}+\frac{\sqrt{e x}\left(5 A+3 B x\right)}{6 a^2 e\sqrt{a+c x^2}}-\frac{B x\sqrt{a+c x^2}}{2 a^2\sqrt{c}\sqrt{e x}\left(\sqrt{a}+\sqrt{c}\,x\right)}+$$

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

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

$$\left(12 a^{9/4} c^{3/4}\sqrt{e x}\sqrt{a+c x^2}\right)$$

Result (type 4, 249 leaves):

$$\left(\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(-3a^2B+5Ac^2x^3+acx(7A-Bx)\right)+\right.$$

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

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

$$\left(6a^2\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,c\sqrt{ex}\left(a+cx^2\right)^{3/2}\right)$$

Problem 482: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{A+Bx}{(ex)^{3/2}\left(a+cx^2\right)^{5/2}}\,dx$$

Optimal (type 4, 373 leaves, 8 steps):

$$\frac{A+Bx}{3ae\sqrt{ex}\left(a+cx^2\right)^{3/2}}+\frac{7A+5Bx}{6a^2e\sqrt{ex}\sqrt{a+cx^2}}-\frac{7A\sqrt{a+cx^2}}{2a^3e\sqrt{ex}}+\frac{7A\sqrt{c}\,x\sqrt{a+cx^2}}{2a^3e\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}-$$

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

$$\left(2a^{11/4}e\sqrt{ex}\sqrt{a+cx^2}\right)+$$

$$\left(\left(5\sqrt{a}\,B+21A\sqrt{c}\right)\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/$$

$$\left(12a^{11/4}c^{1/4}e\sqrt{ex}\sqrt{a+cx^2}\right)$$

Result (type 4, 237 leaves):

$$\left(x\left(\sqrt{a}\,\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,\left(c\,x^2\,(7\,A+5\,B\,x)+a\,(9\,A+7\,B\,x)\right)-\right.\right.$$

$$21\,A\,\sqrt{c}\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{3/2}\,\left(a+c\,x^2\right)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

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

$$\left(6\,a^{5/2}\,\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(e\,x)^{3/2}\,\left(a+c\,x^2\right)^{3/2}\right)$$

Problem 483: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 402 leaves, 9 steps):

$$\frac{A+B\,x}{3\,a\,e\,(e\,x)^{3/2}\,\left(a+c\,x^2\right)^{3/2}}+\frac{9\,A+7\,B\,x}{6\,a^2\,e\,(e\,x)^{3/2}\,\sqrt{a+c\,x^2}}-$$

$$\frac{5\,A\,\sqrt{a+c\,x^2}}{2\,a^3\,e\,(e\,x)^{3/2}}-\frac{7\,B\,\sqrt{a+c\,x^2}}{2\,a^3\,e^2\,\sqrt{e\,x}}+\frac{7\,B\,\sqrt{c}\,x\,\sqrt{a+c\,x^2}}{2\,a^3\,e^2\,\sqrt{e\,x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}-$$

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

$$\left(2\,a^{11/4}\,e^2\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)+\left(\left(7\,\sqrt{a}\,B-5\,A\,\sqrt{c}\right)\,c^{1/4}\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$

$$\left.\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\,\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(4\,a^{13/4}\,e^2\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 253 leaves):

$$\left(x\left(\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}}\left(-15\,A\,c^2\,x^4+7\,a\,c\,x^2\,(-3\,A+B\,x)+a^2\,(-4\,A+9\,B\,x)\right)-\right.\right.$$

$$21\,\sqrt{a}\,B\,\sqrt{c}\,\sqrt{1+\frac{a}{c\,x^2}}\,x^{5/2}\,\left(a+c\,x^2\right)\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]+$$

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

$$\left(6\,a^3\,\sqrt{\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}}\,(e\,x)^{5/2}\,\left(a+c\,x^2\right)^{3/2}\right)$$

Problem 484: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 432 leaves, 10 steps):

$$\frac{A+B\,x}{3\,a\,e\,(e\,x)^{5/2}\,\left(a+c\,x^2\right)^{3/2}}+\frac{11\,A+9\,B\,x}{6\,a^2\,e\,(e\,x)^{5/2}\,\sqrt{a+c\,x^2}}-\frac{77\,A\,\sqrt{a+c\,x^2}}{30\,a^3\,e\,(e\,x)^{5/2}}-$$

$$\frac{5\,B\,\sqrt{a+c\,x^2}}{2\,a^3\,e^2\,(e\,x)^{3/2}}+\frac{77\,A\,c\,\sqrt{a+c\,x^2}}{10\,a^4\,e^3\,\sqrt{e\,x}}-\frac{77\,A\,c^{3/2}\,x\,\sqrt{a+c\,x^2}}{10\,a^4\,e^3\,\sqrt{e\,x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}+$$

$$\left(77\,A\,c^{5/4}\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\,\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/$$

$$\left(10\,a^{15/4}\,e^3\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)-\left(\left(25\,\sqrt{a}\,B+77\,A\,\sqrt{c}\right)c^{3/4}\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\right.$$

$$\left.\sqrt{\frac{a+c\,x^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\,\sqrt{x}}{a^{1/4}}\right],\frac{1}{2}\right]\right)\Big/\left(20\,a^{15/4}\,e^3\,\sqrt{e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 260 leaves):

$$\left(x\left(-\sqrt{a}\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\left(4a^2(3A+5Bx)+3acx^2(33A+35Bx)+c^2x^4(77A+75Bx)\right)+\right.\right.$$

$$231\,A\,c^{3/2}\sqrt{1+\frac{a}{c\,x^2}}\,x^{7/2}\left(a+c\,x^2\right)\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]-$$

$$\left.\left.3\left(25\,i\sqrt{a}\,B+77\,A\sqrt{c}\right)c\sqrt{1+\frac{a}{c\,x^2}}\,x^{7/2}\left(a+c\,x^2\right)\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}}{\sqrt{x}}\right],-1\right]\right)\right)\Big/$$

$$\left(30\,a^{7/2}\sqrt{\frac{i\sqrt{a}}{\sqrt{c}}}\,(e\,x)^{7/2}\left(a+c\,x^2\right)^{3/2}\right)$$

Problem 527: Result more than twice size of optimal antiderivative.

$$\int (A+B\,x)\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^2\,dx$$

Optimal (type 1, 38 leaves, 3 steps):

$$\frac{(A\,b-a\,B)\,(a+b\,x)^5}{5\,b^2}+\frac{B\,(a+b\,x)^6}{6\,b^2}$$

Result (type 1, 84 leaves):

$$\frac{1}{30}x\left(15\,a^4\,(2\,A+B\,x)+20\,a^3\,b\,x\,(3\,A+2\,B\,x)+\right.$$
$$\left.15\,a^2\,b^2\,x^2\,(4\,A+3\,B\,x)+6\,a\,b^3\,x^3\,(5\,A+4\,B\,x)+b^4\,x^4\,(6\,A+5\,B\,x)\right)$$

Problem 543: Result more than twice size of optimal antiderivative.

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

Optimal (type 1, 61 leaves, 3 steps):

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

Result (type 1, 140 leaves):

$$\frac{1}{2}a^6\,A\,x^2+\frac{1}{3}a^5\,(6\,A\,b+a\,B)\,x^3+\frac{3}{4}a^4\,b\,(5\,A\,b+2\,a\,B)\,x^4+a^3\,b^2\,(4\,A\,b+3\,a\,B)\,x^5+$$
$$\frac{5}{6}a^2\,b^3\,(3\,A\,b+4\,a\,B)\,x^6+\frac{3}{7}a\,b^4\,(2\,A\,b+5\,a\,B)\,x^7+\frac{1}{8}b^5\,(A\,b+6\,a\,B)\,x^8+\frac{1}{9}b^6\,B\,x^9$$

Problem 544: Result more than twice size of optimal antiderivative.

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

Optimal (type 1, 38 leaves, 3 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 553: Result more than twice size of optimal antiderivative.

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

Optimal (type 1, 44 leaves, 3 steps):

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

Result (type 1, 123 leaves):

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

Problem 563: Result more than twice size of optimal antiderivative.

$$\int x^3 (d+e x) \left(1+2 x+x^2\right)^5 \, dx$$

Optimal (type 1, 69 leaves, 3 steps):

$$-\frac{1}{11} (d-e) (1+x)^{11}+\frac{1}{12} (3 d-4 e) (1+x)^{12}-\frac{3}{13} (d-2 e) (1+x)^{13}+\frac{1}{14} (d-4 e) (1+x)^{14}+\frac{1}{15} e (1+x)^{15}$$

Result (type 1, 153 leaves):

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

Problem 564: Result more than twice size of optimal antiderivative.

$$\int x^2 (d + e x) (1 + 2 x + x^2)^5 \, dx$$

Optimal (type 1, 55 leaves, 3 steps):

$$\frac{1}{11} (d - e) (1 + x)^{11} - \frac{1}{12} (2 d - 3 e) (1 + x)^{12} + \frac{1}{13} (d - 3 e) (1 + x)^{13} + \frac{1}{14} e (1 + x)^{14}$$

Result (type 1, 148 leaves):

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

Problem 565: Result more than twice size of optimal antiderivative.

$$\int x (d + e x) (1 + 2 x + x^2)^5 \, dx$$

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

$$-\frac{1}{11} (d - e) (1 + x)^{11} + \frac{1}{12} (d - 2 e) (1 + x)^{12} + \frac{1}{13} e (1 + x)^{13}$$

Result (type 1, 147 leaves):

$$\frac{d x^2}{2} + \frac{1}{3} (10 d + e) x^3 + \frac{5}{4} (9 d + 2 e) x^4 + 3 (8 d + 3 e) x^5 + 5 (7 d + 4 e) x^6 + 6 (6 d + 5 e) x^7 + \frac{21}{4} (5 d + 6 e) x^8 + \frac{10}{3} (4 d + 7 e) x^9 + \frac{3}{2} (3 d + 8 e) x^{10} + \frac{5}{11} (2 d + 9 e) x^{11} + \frac{1}{12} (d + 10 e) x^{12} + \frac{e x^{13}}{13}$$

Problem 566: Result more than twice size of optimal antiderivative.

$$\int (d + e x) (1 + 2 x + x^2)^5 \, dx$$

Optimal (type 1, 25 leaves, 3 steps):

$$\frac{1}{11} (d - e) (1 + x)^{11} + \frac{1}{12} e (1 + x)^{12}$$

Result (type 1, 113 leaves):

$$\frac{1}{132} e x^2 (66 + 440 x + 1485 x^2 + 3168 x^3 + 4620 x^4 + 4752 x^5 + 3465 x^6 + 1760 x^7 + 594 x^8 + 120 x^9 + 11 x^{10}) + d \left(x + 5 x^2 + 15 x^3 + 30 x^4 + 42 x^5 + 42 x^6 + 30 x^7 + 15 x^8 + 5 x^9 + x^{10} + \frac{x^{11}}{11}\right)$$

Problem 579: Result more than twice size of optimal antiderivative.

$$\int \frac{(d+e\,x)\,\left(1+2\,x+x^2\right)^5}{x^{13}}\,dx$$

Optimal (type 1, 31 leaves, 3 steps):

$$-\frac{d\,(1+x)^{11}}{12\,x^{12}}+\frac{(d-12\,e)\,(1+x)^{11}}{132\,x^{11}}$$

Result (type 1, 114 leaves):

$$-\frac{1}{132\,x^{12}}\left(12\,e\,x\,\left(1+11\,x+55\,x^2+165\,x^3+330\,x^4+462\,x^5+462\,x^6+330\,x^7+165\,x^8+55\,x^9+11\,x^{10}\right)+d\,\left(11+120\,x+594\,x^2+1760\,x^3+3465\,x^4+4752\,x^5+4620\,x^6+3168\,x^7+1485\,x^8+440\,x^9+66\,x^{10}\right)\right)$$

Problem 580: Result more than twice size of optimal antiderivative.

$$\int \frac{(d+e\,x)\,\left(1+2\,x+x^2\right)^5}{x^{14}}\,dx$$

Optimal (type 1, 52 leaves, 4 steps):

$$-\frac{d\,(1+x)^{11}}{13\,x^{13}}+\frac{(2\,d-13\,e)\,(1+x)^{11}}{156\,x^{12}}-\frac{(2\,d-13\,e)\,(1+x)^{11}}{1716\,x^{11}}$$

Result (type 1, 115 leaves):

$$-\frac{1}{1716\,x^{13}}\left(13\,e\,x\,\left(11+120\,x+594\,x^2+1760\,x^3+3465\,x^4+4752\,x^5+4620\,x^6+3168\,x^7+1485\,x^8+440\,x^9+66\,x^{10}\right)+2\,d\,\left(66+715\,x+3510\,x^2+10\,296\,x^3+20\,020\,x^4+27\,027\,x^5+25\,740\,x^6+17\,160\,x^7+7722\,x^8+2145\,x^9+286\,x^{10}\right)\right)$$

Problem 581: Result more than twice size of optimal antiderivative.

$$\int \frac{(d+e\,x)\,\left(1+2\,x+x^2\right)^5}{x^{15}}\,dx$$

Optimal (type 1, 71 leaves, 5 steps):

$$-\frac{d\,(1+x)^{11}}{14\,x^{14}}+\frac{(3\,d-14\,e)\,(1+x)^{11}}{182\,x^{13}}-\frac{(3\,d-14\,e)\,(1+x)^{11}}{1092\,x^{12}}+\frac{(3\,d-14\,e)\,(1+x)^{11}}{12\,012\,x^{11}}$$

Result (type 1, 149 leaves):

$$-\frac{d}{14\,x^{14}}-\frac{10\,d+e}{13\,x^{13}}-\frac{5\,(9\,d+2\,e)}{12\,x^{12}}-\frac{15\,(8\,d+3\,e)}{11\,x^{11}}-\frac{3\,(7\,d+4\,e)}{x^{10}}-\frac{14\,(6\,d+5\,e)}{3\,x^9}-\frac{21\,(5\,d+6\,e)}{4\,x^8}-\frac{30\,(4\,d+7\,e)}{7\,x^7}-\frac{5\,(3\,d+8\,e)}{2\,x^6}-\frac{2\,d+9\,e}{x^5}-\frac{d+10\,e}{4\,x^4}-\frac{e}{3\,x^3}$$

Problem 596: Result more than twice size of optimal antiderivative.

$$\int x^3 (1+x) \left(1+2x+x^2\right)^5 \, dx$$

Optimal (type 1, 37 leaves, 3 steps):

$$-\frac{1}{12}(1+x)^{12}+\frac{3}{13}(1+x)^{13}-\frac{3}{14}(1+x)^{14}+\frac{1}{15}(1+x)^{15}$$

Result (type 1, 83 leaves):

$$\frac{x^4}{4}+\frac{11x^5}{5}+\frac{55x^6}{6}+\frac{165x^7}{7}+\frac{165x^8}{4}+\frac{154x^9}{3}+\frac{231x^{10}}{5}+30x^{11}+\frac{55x^{12}}{4}+\frac{55x^{13}}{13}+\frac{11x^{14}}{14}+\frac{x^{15}}{15}$$

Problem 597: Result more than twice size of optimal antiderivative.

$$\int x^2 (1+x) \left(1+2x+x^2\right)^5 \, dx$$

Optimal (type 1, 28 leaves, 3 steps):

$$\frac{1}{12}(1+x)^{12}-\frac{2}{13}(1+x)^{13}+\frac{1}{14}(1+x)^{14}$$

Result (type 1, 79 leaves):

$$\frac{x^3}{3}+\frac{11x^4}{4}+11x^5+\frac{55x^6}{2}+\frac{330x^7}{7}+\frac{231x^8}{4}+\frac{154x^9}{3}+33x^{10}+15x^{11}+\frac{55x^{12}}{12}+\frac{11x^{13}}{13}+\frac{x^{14}}{14}$$

Problem 598: Result more than twice size of optimal antiderivative.

$$\int x (1+x) \left(1+2x+x^2\right)^5 \, dx$$

Optimal (type 1, 19 leaves, 3 steps):

$$-\frac{1}{12}(1+x)^{12}+\frac{1}{13}(1+x)^{13}$$

Result (type 1, 77 leaves):

$$\frac{x^2}{2}+\frac{11x^3}{3}+\frac{55x^4}{4}+33x^5+55x^6+66x^7+\frac{231x^8}{4}+\frac{110x^9}{3}+\frac{33x^{10}}{2}+5x^{11}+\frac{11x^{12}}{12}+\frac{x^{13}}{13}$$

Problem 612: Result more than twice size of optimal antiderivative.

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{13}} \, dx$$

Optimal (type 1, 12 leaves, 2 steps):

$$-\frac{(1+x)^{12}}{12\,x^{12}}$$

Result (type 1, 75 leaves):

$$-\frac{1}{12 x^{12}}-\frac{1}{x^{11}}-\frac{11}{2 x^{10}}-\frac{55}{3 x^9}-\frac{165}{4 x^8}-\frac{66}{x^7}-\frac{77}{x^6}-\frac{66}{x^5}-\frac{165}{4 x^4}-\frac{55}{3 x^3}-\frac{11}{2 x^2}-\frac{1}{x}$$

Problem 613: Result more than twice size of optimal antiderivative.

$$\int \frac{(1+x)\left(1+2 x+x^2\right)^5}{x^{14}}\, dx$$

Optimal (type 1, 25 leaves, 3 steps):

$$-\frac{(1+x)^{12}}{13 x^{13}}+\frac{(1+x)^{12}}{156 x^{12}}$$

Result (type 1, 77 leaves):

$$-\frac{1}{13 x^{13}}-\frac{11}{12 x^{12}}-\frac{5}{x^{11}}-\frac{33}{2 x^{10}}-\frac{110}{3 x^9}-\frac{231}{4 x^8}-\frac{66}{x^7}-\frac{55}{x^6}-\frac{33}{x^5}-\frac{55}{4 x^4}-\frac{11}{3 x^3}-\frac{1}{2 x^2}$$

Problem 614: Result more than twice size of optimal antiderivative.

$$\int \frac{(1+x)\left(1+2 x+x^2\right)^5}{x^{15}}\, dx$$

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

$$-\frac{(1+x)^{12}}{14 x^{14}}+\frac{(1+x)^{12}}{91 x^{13}}-\frac{(1+x)^{12}}{1092 x^{12}}$$

Result (type 1, 79 leaves):

$$-\frac{1}{14 x^{14}}-\frac{11}{13 x^{13}}-\frac{55}{12 x^{12}}-\frac{15}{x^{11}}-\frac{33}{x^{10}}-\frac{154}{3 x^9}-\frac{231}{4 x^8}-\frac{330}{7 x^7}-\frac{55}{2 x^6}-\frac{11}{x^5}-\frac{11}{4 x^4}-\frac{1}{3 x^3}$$

Problem 841: Result more than twice size of optimal antiderivative.

$$\int x^m (1+x)\left(1+2 x+x^2\right)^5\, dx$$

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

$$\frac{x^{1+m}}{1+m}+\frac{11 x^{2+m}}{2+m}+\frac{55 x^{3+m}}{3+m}+\frac{165 x^{4+m}}{4+m}+\frac{330 x^{5+m}}{5+m}+\frac{462 x^{6+m}}{6+m}+\frac{462 x^{7+m}}{7+m}+\frac{330 x^{8+m}}{8+m}+\frac{165 x^{9+m}}{9+m}+\frac{55 x^{10+m}}{10+m}+\frac{11 x^{11+m}}{11+m}+\frac{x^{12+m}}{12+m}$$

Result (type 3, 357 leaves):

$$-\Big(\Big(x^m\,\big(39\,916\,800+39\,916\,800\,m\,(1+x)+19\,958\,400\,m\,(1+m)\,(1+x)^2+6\,652\,800\,m\,(1+m)\,(2+m)\,(1+x)^3+1\,663\,200\,m\,(1+m)\,(2+m)\,(3+m)\,(1+x)^4+332\,640\,m\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(1+x)^5+55\,440\,m\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(1+x)^6+7920\,m\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(1+x)^7+990\,m\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(1+x)^8+110\,m\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m)\,(1+x)^9+11\,m\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m)\,(9+m)\,(1+x)^{10}+m\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m)\,(9+m)\,(10+m)\,(1+x)^{11}-(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m)\,(9+m)\,(10+m)\,(11+m)\,(1+x)^{12}\big)\Big)\Big/\Big((1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m)\,(9+m)\,(10+m)\,(11+m)\,(12+m)\Big)\Big)$$

Problem 842: Result more than twice size of optimal antiderivative.

$$\int x^m\,(d+e\,x)\,\left(1+2\,x+x^2\right)^5\,dx$$

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

$$\frac{d\,x^{1+m}}{1+m}+\frac{(10\,d+e)\,x^{2+m}}{2+m}+\frac{5\,(9\,d+2\,e)\,x^{3+m}}{3+m}+\frac{15\,(8\,d+3\,e)\,x^{4+m}}{4+m}+\frac{30\,(7\,d+4\,e)\,x^{5+m}}{5+m}+\frac{42\,(6\,d+5\,e)\,x^{6+m}}{6+m}+\frac{42\,(5\,d+6\,e)\,x^{7+m}}{7+m}+\frac{30\,(4\,d+7\,e)\,x^{8+m}}{8+m}+\frac{15\,(3\,d+8\,e)\,x^{9+m}}{9+m}+\frac{5\,(2\,d+9\,e)\,x^{10+m}}{10+m}+\frac{(d+10\,e)\,x^{11+m}}{11+m}+\frac{e\,x^{12+m}}{12+m}$$

Result (type 3, 499 leaves):

$$\Big(x^m\,\big(3\,628\,800\,(e\,(1+m)-d\,(12+m))+3\,628\,800\,m\,(e\,(1+m)-d\,(12+m))\,(1+x)+1\,814\,400\,m\,(1+m)\,(e\,(1+m)-d\,(12+m))\,(1+x)^2+604\,800\,m\,(1+m)\,(2+m)\,(e\,(1+m)-d\,(12+m))\,(1+x)^3+151\,200\,m\,(1+m)\,(2+m)\,(3+m)\,(e\,(1+m)-d\,(12+m))\,(1+x)^4+30\,240\,m\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(e\,(1+m)-d\,(12+m))\,(1+x)^5+5040\,m\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(e\,(1+m)-d\,(12+m))\,(1+x)^6+720\,m\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(e\,(1+m)-d\,(12+m))\,(1+x)^7+90\,m\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(e\,(1+m)-d\,(12+m))\,(1+x)^8+10\,m\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m)\,(e\,(1+m)-d\,(12+m))\,(1+x)^9+m\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m)\,(9+m)\,(e\,(1+m)-d\,(12+m))\,(1+x)^{10}+(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m)\,(9+m)\,(10+m)\,(-2\,e\,(6+m)+d\,(12+m))\,(1+x)^{11}+e\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m)\,(9+m)\,(10+m)\,(11+m)\,(1+x)^{12}\big)\Big)\Big/\Big((1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m)\,(9+m)\,(10+m)\,(11+m)\,(12+m)\Big)$$

Problem 980: Result more than twice size of optimal antiderivative.

$$\int \frac{1-x}{x\,\sqrt{1+3\,x+x^2}}\,dx$$

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

$$-2\,\text{ArcTanh}\left[\frac{1+x}{\sqrt{1+3x+x^2}}\right]$$

Result (type 3, 47 leaves):

$$\text{Log}[x]-\text{Log}\left[3+2x+2\sqrt{1+3x+x^2}\right]-\text{Log}\left[2+3x+2\sqrt{1+3x+x^2}\right]$$

Problem 1029: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \sqrt{x}\,(A+Bx)\sqrt{a+bx+cx^2}\,dx$$

Optimal (type 4, 454 leaves, 6 steps):

$$-\frac{2\left(5abBc-2\left(b^2-3ac\right)(4bB-7Ac)\right)\sqrt{x}\sqrt{a+bx+cx^2}}{105c^{5/2}\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{2\sqrt{x}\left(4b^2B-7Abc+5aBc+3c(4bB-7Ac)x\right)\sqrt{a+bx+cx^2}}{105c^2}+\frac{2B\sqrt{x}\left(a+bx+cx^2\right)^{3/2}}{7c}+$$
$$\left(2a^{1/4}\left(5abBc-2\left(b^2-3ac\right)(4bB-7Ac)\right)\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+bx+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\right.$$
$$\left.\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{4}\left(2-\frac{b}{\sqrt{a}\sqrt{c}}\right)\right]\right)\Big/\left(105c^{11/4}\sqrt{a+bx+cx^2}\right)-$$
$$\left(a^{1/4}\left(5abBc-2\left(b^2-3ac\right)(4bB-7Ac)-\sqrt{a}\sqrt{c}\left(4b^2B-7Abc-10aBc\right)\right)\right.$$
$$\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+bx+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}$$
$$\left.\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{c^{1/4}\sqrt{x}}{a^{1/4}}\right],\frac{1}{4}\left(2-\frac{b}{\sqrt{a}\sqrt{c}}\right)\right]\right)\Big/\left(105c^{11/4}\sqrt{a+bx+cx^2}\right)$$

Result (type 4, 2019 leaves):

$$\left(\frac{2\left(-4b^2B+7Abc+10aBc\right)\sqrt{x}}{105c^2}+\frac{2(bB+7Ac)x^{3/2}}{35c}+\frac{2}{7}Bx^{5/2}\right)\sqrt{a+x(b+cx)}-$$
$$\frac{1}{105c^2\sqrt{a+bx+cx^2}}2\sqrt{a+x(b+cx)}$$

$$\left(\frac{\left(-8 b^3 B+14 A b^2 c+29 a b B c-42 a A c^2\right)\left(c+\frac{a}{x^2}+\frac{b}{x}\right) x^{3/2}}{c\sqrt{a+\left(c+\frac{b}{x}\right) x^2}}+\frac{1}{c\sqrt{a+\left(c+\frac{b}{x}\right) x^2}}\, a\sqrt{c+\frac{a}{x^2}+\frac{b}{x}}\; x\right.$$

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

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{a}{-b-\sqrt{b^2-4 a c}}}}{\sqrt{x}}\right],\frac{-b-\sqrt{b^2-4 a c}}{-b+\sqrt{b^2-4 a c}}\right]-\right.$$

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

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

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

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{a}{-b-\sqrt{b^2-4 a c}}}}{\sqrt{x}}\right],\frac{-b-\sqrt{b^2-4 a c}}{-b+\sqrt{b^2-4 a c}}\right]-\right.$$

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

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

$$\left(29\, i\, b\, B\, c\left(-b+\sqrt{b^2-4\,a\,c}\right)\sqrt{1-\frac{2\,a}{\left(-b-\sqrt{b^2-4\,a\,c}\right)x}}\,\sqrt{1-\frac{2\,a}{\left(-b+\sqrt{b^2-4\,a\,c}\right)x}}\right.$$

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{a}{-b-\sqrt{b^2-4\,a\,c}}}}{\sqrt{x}}\right],\frac{-b-\sqrt{b^2-4\,a\,c}}{-b+\sqrt{b^2-4\,a\,c}}\right]-\right.$$

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

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

$$\left(21\, i\, A\, c^2\left(-b+\sqrt{b^2-4\,a\,c}\right)\sqrt{1-\frac{2\,a}{\left(-b-\sqrt{b^2-4\,a\,c}\right)x}}\,\sqrt{1-\frac{2\,a}{\left(-b+\sqrt{b^2-4\,a\,c}\right)x}}\right.$$

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{a}{-b-\sqrt{b^2-4\,a\,c}}}}{\sqrt{x}}\right],\frac{-b-\sqrt{b^2-4\,a\,c}}{-b+\sqrt{b^2-4\,a\,c}}\right]-\right.$$

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

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

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

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

$$\left(7\,\mathrm{i}\,A\,b\,c^2\,\sqrt{1-\frac{2\,a}{\left(-b-\sqrt{b^2-4\,a\,c}\right)\,x}}\,\sqrt{1-\frac{2\,a}{\left(-b+\sqrt{b^2-4\,a\,c}\right)\,x}}\right.$$

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{a}{-b-\sqrt{b^2-4\,a\,c}}}}{\sqrt{x}}\right],\,\frac{-b-\sqrt{b^2-4\,a\,c}}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\Bigg/$$

$$\left(\sqrt{2}\,\sqrt{-\frac{a}{-b-\sqrt{b^2-4\,a\,c}}}\,\sqrt{c+\frac{a}{x^2}+\frac{b}{x}}\right)+\left(5\,\mathrm{i}\,\sqrt{2}\,a\,B\,c^2\,\sqrt{1-\frac{2\,a}{\left(-b-\sqrt{b^2-4\,a\,c}\right)\,x}}\right.$$

$$\sqrt{1-\frac{2\,a}{\left(-b+\sqrt{b^2-4\,a\,c}\right)\,x}}\;\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{a}{-b-\sqrt{b^2-4\,a\,c}}}}{\sqrt{x}}\right],\right.$$

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

Problem 1030: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 373 leaves, 5 steps):

$$-\frac{2\left(2 b^2 B-5 A b c-6 a B c\right)\sqrt{x}\sqrt{a+b x+c x^2}}{15 c^{3/2}\left(\sqrt{a}+\sqrt{c}\, x\right)}+\frac{2\sqrt{x}\left(b B+5 A c+3 B c x\right)\sqrt{a+b x+c x^2}}{15 c}+$$

$$\left(2 a^{1/4}\left(2 b^2 B-5 A b c-6 a B c\right)\left(\sqrt{a}+\sqrt{c}\, x\right)\sqrt{\frac{a+b x+c x^2}{\left(\sqrt{a}+\sqrt{c}\, x\right)^2}}\right.$$

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

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

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

Result (type 4, 550 leaves) :

$$\frac{1}{30\sqrt{a+x\,(b+c\,x)}}\left(\frac{4\sqrt{x}\,(b\,B+5\,A\,c+3\,B\,c\,x)\,(a+x\,(b+c\,x))}{c}+\frac{1}{c^2}x\left(-\frac{4\left(2\,b^2\,B-5\,A\,b\,c-6\,a\,B\,c\right)(a+x\,(b+c\,x))}{x^{3/2}}+\right.\right.$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{b^2-4\,a\,c}}}}\,\mathrm{i}\,\left(2\,b^2\,B-5\,A\,b\,c-6\,a\,B\,c\right)\left(-b+\sqrt{b^2-4\,a\,c}\right)\sqrt{2+\frac{4\,a}{\left(b+\sqrt{b^2-4\,a\,c}\right)x}}$$

$$\sqrt{\frac{2\,a+b\,x-\sqrt{b^2-4\,a\,c}\;x}{b\,x-\sqrt{b^2-4\,a\,c}\;x}}\;\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{\frac{a}{b+\sqrt{b^2-4\,a\,c}}}}{\sqrt{x}}\right],\frac{b+\sqrt{b^2-4\,a\,c}}{b-\sqrt{b^2-4\,a\,c}}\right]+$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{b^2-4\,a\,c}}}}\,\mathrm{i}\,\left(2\,b^3\,B-b^2\left(5\,A\,c+2\,B\sqrt{b^2-4\,a\,c}\right)+2\,a\,c\left(10\,A\,c+3\,B\sqrt{b^2-4\,a\,c}\right)+\right.$$

$$\left.b\left(-8\,a\,B\,c+5\,A\,c\sqrt{b^2-4\,a\,c}\right)\right)\sqrt{2+\frac{4\,a}{\left(b+\sqrt{b^2-4\,a\,c}\right)x}}\;\sqrt{\frac{2\,a+b\,x-\sqrt{b^2-4\,a\,c}\;x}{b\,x-\sqrt{b^2-4\,a\,c}\;x}}$$

$$\left.\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{\frac{a}{b+\sqrt{b^2-4\,a\,c}}}}{\sqrt{x}}\right],\frac{b+\sqrt{b^2-4\,a\,c}}{b-\sqrt{b^2-4\,a\,c}}\right]\right)\right)$$

Problem 1031: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 341 leaves, 5 steps):

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

Result (type 4, 491 leaves):

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

Problem 1032: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 353 leaves, 5 steps):

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

Result (type 4, 499 leaves):

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

$$(a+x\,(b+c\,x))+i\,(A\,b+6\,a\,B)\,\left(b-\sqrt{b^2-4\,a\,c}\right)\sqrt{1+\frac{2\,a}{\left(b+\sqrt{b^2-4\,a\,c}\right)\,x}}\;x^{3/2}$$

$$\sqrt{\frac{4\,a+2\,b\,x-2\,\sqrt{b^2-4\,a\,c}\;x}{b\,x-\sqrt{b^2-4\,a\,c}\;x}}\;\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{\frac{a}{b+\sqrt{b^2-4\,a\,c}}}}{\sqrt{x}}\right],\frac{b+\sqrt{b^2-4\,a\,c}}{b-\sqrt{b^2-4\,a\,c}}\right]+$$

$$i\left(6\,a\,B\,\sqrt{b^2-4\,a\,c}\;+A\left(-b^2+4\,a\,c+b\,\sqrt{b^2-4\,a\,c}\right)\right)$$

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

$$\left.\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{\frac{a}{b+\sqrt{b^2-4\,a\,c}}}}{\sqrt{x}}\right],\frac{b+\sqrt{b^2-4\,a\,c}}{b-\sqrt{b^2-4\,a\,c}}\right]\right)\right)$$

Problem 1033: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 421 leaves, 6 steps):

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

Result (type 4, 576 leaves) :

$$\frac{1}{30\,a^2\,x^{5/2}\,\sqrt{a+x\,(b+c\,x)}}\left(-4\,(a+x\,(b+c\,x))\,\left(-2\,A\,b^2\,x^2+a^2\,(3\,A+5\,B\,x)+a\,x\,(5\,b\,B\,x+A\,(b+6\,c\,x))\right)+\right.$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{b^2-4\,a\,c}}}}\,x^2\left(4\,\left(-2\,A\,b^2+5\,a\,b\,B+6\,a\,A\,c\right)\,\sqrt{\frac{a}{b+\sqrt{b^2-4\,a\,c}}}\,(a+x\,(b+c\,x))+\right.$$

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

$$\sqrt{\frac{4\,a+2\,b\,x-2\,\sqrt{b^2-4\,a\,c}\,x}{b\,x-\sqrt{b^2-4\,a\,c}\,x}}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{\frac{a}{b+\sqrt{b^2-4\,a\,c}}}}{\sqrt{x}}\right],\,\frac{b+\sqrt{b^2-4\,a\,c}}{b-\sqrt{b^2-4\,a\,c}}\right]-$$

$$\mathrm{i}\,\left(5\,a\,B\,\left(b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}\right)+2\,A\,\left(-b^3+4\,a\,b\,c+b^2\,\sqrt{b^2-4\,a\,c}\,-3\,a\,c\,\sqrt{b^2-4\,a\,c}\right)\right)$$

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

$$\left.\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{\frac{a}{b+\sqrt{b^2-4\,a\,c}}}}{\sqrt{x}}\right],\,\frac{b+\sqrt{b^2-4\,a\,c}}{b-\sqrt{b^2-4\,a\,c}}\right]\right)\right)$$

Problem 1034: Result unnecessarily involves imaginary or complex numbers.

$$\int (2-5\,x)\,x^{7/2}\,\sqrt{2+5\,x+3\,x^2}\,dx$$

Optimal (type 4, 251 leaves, 9 steps):

$$\frac{1543648\sqrt{x}\,(2+3x)}{6567561\sqrt{2+5x+3x^2}}-\frac{8\sqrt{x}\,(397265+502911x)\sqrt{2+5x+3x^2}}{2189187}+$$
$$\frac{157160\sqrt{x}\,(2+5x+3x^2)^{3/2}}{243243}-\frac{21620x^{3/2}\,(2+5x+3x^2)^{3/2}}{34749}+\frac{656x^{5/2}\,(2+5x+3x^2)^{3/2}}{1287}-$$
$$\frac{10}{39}x^{7/2}\,(2+5x+3x^2)^{3/2}-\frac{1543648\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{6567561\sqrt{2+5x+3x^2}}+$$
$$\frac{349240\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{2189187\sqrt{2+5x+3x^2}}$$

Result (type 4, 178 leaves):

$$\Bigg(2\,(1543648+2811400x+670548x^2-141444x^3+$$
$$58374x^4+2892348x^5+671895x^6-10195794x^7-7577955x^8)+$$
$$1543648\,\mathrm{i}\,\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-$$
$$495928\,\mathrm{i}\,\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\Bigg)\Bigg/$$
$$\left(6567561\sqrt{x}\sqrt{2+5x+3x^2}\right)$$

Problem 1035: Result unnecessarily involves imaginary or complex numbers.

$$\int (2-5x)\,x^{5/2}\sqrt{2+5x+3x^2}\,dx$$

Optimal (type 4, 228 leaves, 8 steps):

$$-\frac{261784\sqrt{x}\,(2+3x)}{841995\sqrt{2+5x+3x^2}}+\frac{8\sqrt{x}\,(57860+74313x)\sqrt{2+5x+3x^2}}{280665}-\frac{4420\sqrt{x}\,(2+5x+3x^2)^{3/2}}{6237}+\frac{532}{891}x^{3/2}(2+5x+3x^2)^{3/2}-\frac{10}{33}x^{5/2}(2+5x+3x^2)^{3/2}+\frac{261784\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{841995\sqrt{2+5x+3x^2}}-\frac{13016\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{56133\sqrt{2+5x+3x^2}}$$

Result (type 4, 170 leaves):

$$\left(-523568-918440x-198168x^2+39780x^3+947916x^4+271350x^5-3129840x^6-2296350x^7-261784\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+66544\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(841995\sqrt{x}\sqrt{2+5x+3x^2}\right)$$

Problem 1036: Result unnecessarily involves imaginary or complex numbers.

$$\int(2-5x)\,x^{3/2}\sqrt{2+5x+3x^2}\,dx$$

Optimal (type 4, 205 leaves, 7 steps):

$$\frac{2360\sqrt{x}\,(2+3x)}{5103\sqrt{2+5x+3x^2}}-\frac{4\sqrt{x}\,(779+1035x)\sqrt{2+5x+3x^2}}{1701}+\frac{136}{189}\sqrt{x}\,(2+5x+3x^2)^{3/2}-\frac{10}{27}x^{3/2}(2+5x+3x^2)^{3/2}-\frac{2360\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{5103\sqrt{2+5x+3x^2}}+\frac{668\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{1701\sqrt{2+5x+3x^2}}$$

Result (type 4, 165 leaves):

$$\left(4720+7792\,x+1380\,x^2+7920\,x^3+2970\,x^4-23\,652\,x^5-\right.$$
$$17\,010\,x^6+2360\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-$$
$$\left.356\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(5103\,\sqrt{x}\,\sqrt{2+5\,x+3\,x^2}\right)$$

Problem 1037: Result unnecessarily involves imaginary or complex numbers.

$$\int(2-5\,x)\,\sqrt{x}\,\sqrt{2+5\,x+3\,x^2}\,dx$$

Optimal (type 4, 182 leaves, 6 steps):

$$-\frac{2476\,\sqrt{x}\,(2+3\,x)}{2835\,\sqrt{2+5\,x+3\,x^2}}+\frac{4}{945}\,\sqrt{x}\,(430+639\,x)\,\sqrt{2+5\,x+3\,x^2}-$$
$$\frac{10}{21}\,\sqrt{x}\,\left(2+5\,x+3\,x^2\right)^{3/2}+\frac{2476\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{2835\,\sqrt{2+5\,x+3\,x^2}}-$$
$$\frac{164\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{189\,\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 163 leaves):

$$\left(-2\left(2476+3730x-3354x^2-1935x^3+8748x^4+6075x^5\right)-\right.$$

$$2476\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+$$

$$\left.16\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(2835\sqrt{x}\,\sqrt{2+5x+3x^2}\right)$$

Problem 1038: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(2-5x)\sqrt{2+5x+3x^2}}{\sqrt{x}}\,dx$$

Optimal (type 4, 159 leaves, 5 steps):

$$\frac{88\sqrt{x}\,(2+3x)}{27\sqrt{2+5x+3x^2}}+\frac{2}{9}(1-9x)\sqrt{x}\,\sqrt{2+5x+3x^2}-$$

$$\frac{88\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{27\sqrt{2+5x+3x^2}}+$$

$$\frac{34\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{9\sqrt{2+5x+3x^2}}$$

Result (type 4, 158 leaves):

$$\left(2\left(88+226x+93x^2-126x^3-81x^4\right)+\right.$$

$$88\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+$$

$$\left.14\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(27\sqrt{x}\sqrt{2+5x+3x^2}\right)$$

Problem 1039: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 159 leaves, 5 steps):

$$\frac{22\sqrt{x}\,(2+3x)}{9\sqrt{2+5x+3x^2}}-\frac{2\,(6+5x)\sqrt{2+5x+3x^2}}{3\sqrt{x}}-$$

$$\frac{22\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{9\sqrt{2+5x+3x^2}}+$$

$$\frac{10\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{3\sqrt{2+5x+3x^2}}$$

Result (type 4, 153 leaves):

$$\left(-2\left(14+65x+96x^2+45x^3\right)+22\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+\right.$$

$$\left.8\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(9\sqrt{x}\sqrt{2+5x+3x^2}\right)$$

Problem 1040: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 157 leaves, 5 steps):

$$-\frac{50\sqrt{x}\,(2+3x)}{3\sqrt{2+5x+3x^2}}-\frac{4\,(1-5x)\sqrt{2+5x+3x^2}}{3x^{3/2}}+\frac{50\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{3\sqrt{2+5x+3x^2}}-\frac{21\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2+5x+3x^2}}$$

Result (type 4, 153 leaves):

$$\left(-2\left(4+40x+81x^2+45x^3\right)-50\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{5/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-13\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{5/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(3x^{3/2}\sqrt{2+5x+3x^2}\right)$$

Problem 1041: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(2-5x)\sqrt{2+5x+3x^2}}{x^{7/2}}\,dx$$

Optimal (type 4, 180 leaves, 6 steps):

$$-\frac{139\sqrt{x}\,(2+3x)}{15\sqrt{2+5x+3x^2}}-\frac{4\,(3-10x)\sqrt{2+5x+3x^2}}{15x^{5/2}}+\frac{139\sqrt{2+5x+3x^2}}{15\sqrt{x}}+\frac{139\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{15\sqrt{2+5x+3x^2}}-\frac{11\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2+5x+3x^2}}$$

Result (type 4, 153 leaves):

$$\left(4\left(-6+5x+41x^2+30x^3\right)-139\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{7/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-26\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{7/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(15x^{5/2}\sqrt{2+5x+3x^2}\right)$$

Problem 1042: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(2-5x)\sqrt{2+5x+3x^2}}{x^{9/2}}\,dx$$

Optimal (type 4, 205 leaves, 7 steps):

$$\frac{62\sqrt{x}\,(2+3x)}{21\sqrt{2+5x+3x^2}}-\frac{4(1-3x)\sqrt{2+5x+3x^2}}{7x^{7/2}}+\frac{43\sqrt{2+5x+3x^2}}{21x^{3/2}}-\frac{62\sqrt{2+5x+3x^2}}{21\sqrt{x}}-\frac{62\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{21\sqrt{2+5x+3x^2}}+\frac{43(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{7\sqrt{2}\sqrt{2+5x+3x^2}}$$

Result (type 4, 155 leaves):

$$\left(-48+24x+460x^2+646x^3+258x^4+124\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{9/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+5\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{9/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(42x^{7/2}\sqrt{2+5x+3x^2}\right)$$

Problem 1043: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(2-5x)\sqrt{2+5x+3x^2}}{x^{11/2}}\,dx$$

Optimal (type 4, 228 leaves, 8 steps):

$$-\frac{1331\sqrt{x}\,(2+3x)}{630\sqrt{2+5x+3x^2}}-\frac{4\,(7-20x)\sqrt{2+5x+3x^2}}{63\,x^{9/2}}+\frac{97\sqrt{2+5x+3x^2}}{105\,x^{5/2}}-\frac{79\sqrt{2+5x+3x^2}}{63\,x^{3/2}}+\frac{1331\sqrt{2+5x+3x^2}}{630\sqrt{x}}+\frac{1331\,(1+x)\sqrt{\frac{2+3x}{1+x}}\;\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{315\sqrt{2}\sqrt{2+5x+3x^2}}-\frac{79\,(1+x)\sqrt{\frac{2+3x}{1+x}}\;\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{21\sqrt{2}\sqrt{2+5x+3x^2}}$$

Result (type 4, 160 leaves):

$$\left(-560+200x+4324x^2+3730x^3-2204x^4-2370x^5-1331\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{11/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+146\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{11/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(630\,x^{9/2}\sqrt{2+5x+3x^2}\right)$$

Problem 1044: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 256 leaves, 9 steps):

$$-\frac{497824\sqrt{x}\,(2+3x)}{32837805\sqrt{2+5x+3x^2}}-\frac{8\sqrt{x}\,(190465+205407x)\sqrt{2+5x+3x^2}}{10945935}+\frac{8\sqrt{x}\,(27010+32921x)\,(2+5x+3x^2)^{3/2}}{243243}-\frac{4660\sqrt{x}\,(2+5x+3x^2)^{5/2}}{11583}+\frac{136}{351}x^{3/2}\,(2+5x+3x^2)^{5/2}-\frac{2}{9}x^{5/2}\,(2+5x+3x^2)^{5/2}+\frac{497824\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{32837805\sqrt{2+5x+3x^2}}-\frac{61736\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{2189187\sqrt{2+5x+3x^2}}$$

Result (type 4, 183 leaves):

$$\left(-497824\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-2\left(497824+318520x-273876x^2+91620x^3-37601118x^4-83323080x^5+69664455x^6+337486905x^7+320800095x^8+98513415x^9+214108\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\right)\Bigg/\left(32837805\sqrt{x}\sqrt{2+5x+3x^2}\right)$$

Problem 1045: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 233 leaves, 8 steps):

$$\frac{55112\sqrt{x}\,(2+3x)}{729729\sqrt{2+5x+3x^2}}+\frac{8\sqrt{x}\,(6908+6381x)\sqrt{2+5x+3x^2}}{243243}-\frac{4\sqrt{x}\,(6959+8575x)\,(2+5x+3x^2)^{3/2}}{27027}+\frac{556\sqrt{x}\,(2+5x+3x^2)^{5/2}}{1287}-\frac{10}{39}x^{3/2}\,(2+5x+3x^2)^{5/2}-\frac{55112\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{729729\sqrt{2+5x+3x^2}}+\frac{25448\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{243243\sqrt{2+5x+3x^2}}$$

Result (type 4, 178 leaves):

$$\left(-2\left(-55112-61436x+8508x^2-1171602x^3-2497986x^4+1830195x^5+8989785x^6+8374023x^7+2525985x^8\right)+55112\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+21232\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(729729\sqrt{x}\sqrt{2+5x+3x^2}\right)$$

Problem 1046: Result unnecessarily involves imaginary or complex numbers.

$$\int (2-5x)\sqrt{x}\,(2+5x+3x^2)^{3/2}\,dx$$

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

$$-\frac{424\sqrt{x}\,(2+3x)}{1155\sqrt{2+5x+3x^2}}-\frac{4}{385}\sqrt{x}\,(55+39x)\sqrt{2+5x+3x^2}+\frac{4}{231}\sqrt{x}\,(65+84x)\left(2+5x+3x^2\right)^{3/2}-\frac{10}{33}\sqrt{x}\left(2+5x+3x^2\right)^{5/2}+\frac{424\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{1155\sqrt{2+5x+3x^2}}-\frac{36\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{77\sqrt{2+5x+3x^2}}$$

Result (type 4, 173 leaves):

$$\left(-424\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-2\left(424+520x-3106x^2-6140x^3+3497x^4+17775x^5+16065x^6+4725x^7+58\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\right)\Big/\left(1155\sqrt{x}\sqrt{2+5x+3x^2}\right)$$

Problem 1047: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 187 leaves, 6 steps):

$$\frac{860\sqrt{x}\,(2+3x)}{243\sqrt{2+5x+3x^2}}+\frac{4}{81}\sqrt{x}\,(82+45x)\sqrt{2+5x+3x^2}-\frac{2}{9}\sqrt{x}\,(1+5x)\left(2+5x+3x^2\right)^{3/2}-\frac{860\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{243\sqrt{2+5x+3x^2}}+\frac{356\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{81\sqrt{2+5x+3x^2}}$$

Result (type 4, 165 leaves):

$$\left(1720+6052\,x+6420\,x^2-1746\,x^3-9990\,x^4-8586\,x^5-2430\,x^6+860\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+208\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(243\,\sqrt{x}\,\sqrt{2+5\,x+3\,x^2}\right)$$

Problem 1048: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 187 leaves, 6 steps):

$$\frac{5848\,\sqrt{x}\,(2+3\,x)}{315\,\sqrt{2+5\,x+3\,x^2}}+\frac{2}{105}\,\sqrt{x}\,(1045+531\,x)\,\sqrt{2+5\,x+3\,x^2}-\frac{2\,(14+5\,x)\,\left(2+5\,x+3\,x^2\right)^{3/2}}{7\,\sqrt{x}}-\frac{5848\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{315\,\sqrt{2+5\,x+3\,x^2}}+\frac{482\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{21\,\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 163 leaves):

$$\left(-2\left(-3328-7390\,x+177\,x^2+9855\,x^3+7641\,x^4+2025\,x^5\right)+\right.$$

$$5848\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+$$

$$\left.1382\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(315\,\sqrt{x}\,\sqrt{2+5\,x+3\,x^2}\right)$$

Problem 1049: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 183 leaves, 6 steps):

$$-\frac{34\,\sqrt{x}\,(2+3\,x)}{3\,\sqrt{2+5\,x+3\,x^2}}+\frac{2\,(2-x)\,\sqrt{2+5\,x+3\,x^2}}{\sqrt{x}}-$$

$$\frac{2\,(2+3\,x)\,\left(2+5\,x+3\,x^2\right)^{3/2}}{3\,x^{3/2}}+\frac{34\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{3\,\sqrt{2+5\,x+3\,x^2}}-$$

$$\frac{14\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 163 leaves):

$$\left(-34\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{5/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-\right.$$

$$2\left(8+74\,x+195\,x^2+219\,x^3+117\,x^4+27\,x^5+\right.$$

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

Problem 1050: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 185 leaves, 6 steps):

$$-\frac{1418\,\sqrt{x}\,(2+3\,x)}{15\,\sqrt{2+5\,x+3\,x^2}}+\frac{2\,(89-35\,x)\,\sqrt{2+5\,x+3\,x^2}}{5\,\sqrt{x}}-$$

$$\frac{4\,(3-5\,x)\,\left(2+5\,x+3\,x^2\right)^{3/2}}{15\,x^{5/2}}+\frac{1418\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{15\,\sqrt{2+5\,x+3\,x^2}}-$$

$$\frac{117\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 163 leaves):

$$\left(-2\left(24+80x+906x^2+2230x^3+1605x^4+225x^5\right)-\right.$$

$$1418\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{7/2}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-$$

$$\left.337\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{7/2}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(15\,x^{5/2}\,\sqrt{2+5x+3x^2}\right)$$

Problem 1051: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{9/2}}\,dx$$

Optimal (type 4, 187 leaves, 6 steps):

$$-\frac{633\sqrt{x}\,(2+3x)}{7\sqrt{2+5x+3x^2}}+\frac{3\,(22+133x)\,\sqrt{2+5x+3x^2}}{7\,x^{3/2}}-$$

$$\frac{4\,(1-2x)\left(2+5x+3x^2\right)^{3/2}}{7\,x^{7/2}}+\frac{633\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{7\sqrt{2+5x+3x^2}}-$$

$$\frac{783\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{7\sqrt{2+5x+3x^2}}$$

Result (type 4, 163 leaves):

$$\left(-2\left(8+24x-72x^2-19x^3+384x^4+315x^5\right)-\right.$$

$$633\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{9/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-$$

$$\left.150\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{9/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(7\,x^{7/2}\sqrt{2+5x+3x^2}\right)$$

Problem 1052: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{11/2}}\,dx$$

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

$$-\frac{5438\sqrt{x}\,(2+3x)}{315\sqrt{2+5x+3x^2}}+\frac{5438\sqrt{2+5x+3x^2}}{315\sqrt{x}}+\frac{(1446+4055x)\sqrt{2+5x+3x^2}}{315\,x^{5/2}}-$$

$$\frac{4\,(7-15x)\left(2+5x+3x^2\right)^{3/2}}{63\,x^{9/2}}+\frac{5438\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{315\sqrt{2+5x+3x^2}}-$$

$$\frac{899\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{21\sqrt{2}\sqrt{2+5x+3x^2}}$$

Result (type 4, 160 leaves):

$$\left(-1120-3200\,x+7424\,x^2+44\,480\,x^3+64\,706\,x^4+29\,730\,x^5-\right.$$

$$10\,876\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{11/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-$$

$$\left.2609\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{11/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(630\,x^{9/2}\,\sqrt{2+5\,x+3\,x^2}\right)$$

Problem 1053: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(2-5\,x)\,\left(2+5\,x+3\,x^2\right)^{3/2}}{x^{13/2}}\,dx$$

Optimal (type 4, 233 leaves, 8 steps):

$$\frac{3229\,\sqrt{x}\,(2+3\,x)}{1386\,\sqrt{2+5\,x+3\,x^2}}+\frac{1357\,\sqrt{2+5\,x+3\,x^2}}{693\,x^{3/2}}-\frac{3229\,\sqrt{2+5\,x+3\,x^2}}{1386\,\sqrt{x}}+\frac{(634+1367\,x)\,\sqrt{2+5\,x+3\,x^2}}{231\,x^{7/2}}-$$

$$\frac{4\,(9-20\,x)\,\left(2+5\,x+3\,x^2\right)^{3/2}}{99\,x^{11/2}}-\frac{3229\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{693\,\sqrt{2}\,\sqrt{2+5\,x+3\,x^2}}+$$

$$\frac{1357\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{231\,\sqrt{2}\,\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 165 leaves):

$$\left(-2016 - 5600\,x + 11\,360\,x^2 + 61\,744\,x^3 + 86\,914\,x^4 + 48\,256\,x^5 + \right.$$

$$8142\,x^6 + 3229\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{13/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right] +$$

$$\left.842\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{13/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right) \Big/ \left(1386\,x^{11/2}\,\sqrt{2+5\,x+3\,x^2}\right)$$

Problem 1054: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(2-5\,x)\,\left(2+5\,x+3\,x^2\right)^{3/2}}{x^{15/2}}\,dx$$

Optimal (type 4, 256 leaves, 9 steps):

$$-\frac{6907\,\sqrt{x}\,(2+3\,x)}{10\,010\,\sqrt{2+5\,x+3\,x^2}} + \frac{204\,\sqrt{2+5\,x+3\,x^2}}{385\,x^{5/2}} - \frac{1231\,\sqrt{2+5\,x+3\,x^2}}{2002\,x^{3/2}} + \frac{6907\,\sqrt{2+5\,x+3\,x^2}}{10\,010\,\sqrt{x}} + \frac{(1834+3445\,x)\,\sqrt{2+5\,x+3\,x^2}}{1001\,x^{9/2}} -$$

$$\frac{4\,(11-25\,x)\,\left(2+5\,x+3\,x^2\right)^{3/2}}{143\,x^{13/2}} + \frac{6907\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{5005\,\sqrt{2}\,\sqrt{2+5\,x+3\,x^2}} -$$

$$\frac{3693\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{2002\,\sqrt{2}\,\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 170 leaves):

$$\left(-24640-67200\,x+125440\,x^2+654400\,x^3+840316\,x^4+361120\,x^5-29726\,x^6-36930\,x^7-\right.$$

$$13814\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{15/2}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-4651\,\mathrm{i}\,\sqrt{2}$$

$$\left.\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{15/2}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(20020\,x^{13/2}\,\sqrt{2+5\,x+3\,x^2}\right)$$

Problem 1055: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 300 leaves, 5 steps):

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

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

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

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

Result (type 4, 444 leaves):

$$-\left(\left(x^2\left(-\frac{4B\sqrt{\frac{a}{b+\sqrt{b^2-4ac}}}\,(a+x(b+cx))}{x^2}+\frac{1}{\sqrt{x}}\,\mathrm{i}\,B\left(-b+\sqrt{b^2-4ac}\right)\sqrt{2+\frac{4a}{\left(b+\sqrt{b^2-4ac}\right)x}}\right.\right.\right.$$

$$\sqrt{\frac{2a+bx-\sqrt{b^2-4ac}\;x}{bx-\sqrt{b^2-4ac}\;x}}\;\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{\frac{a}{b+\sqrt{b^2-4ac}}}}{\sqrt{x}}\right],\frac{b+\sqrt{b^2-4ac}}{b-\sqrt{b^2-4ac}}\right]-$$

$$\frac{1}{\sqrt{x}}\,\mathrm{i}\left(-bB+2Ac+B\sqrt{b^2-4ac}\right)\sqrt{2+\frac{4a}{\left(b+\sqrt{b^2-4ac}\right)x}}\sqrt{\frac{2a+bx-\sqrt{b^2-4ac}\;x}{bx-\sqrt{b^2-4ac}\;x}}$$

$$\left.\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{\frac{a}{b+\sqrt{b^2-4ac}}}}{\sqrt{x}}\right],\frac{b+\sqrt{b^2-4ac}}{b-\sqrt{b^2-4ac}}\right]\right)\right)\Bigg/$$

$$\left.\left(2c\sqrt{\frac{a}{b+\sqrt{b^2-4ac}}}\sqrt{e x}\sqrt{a+x(b+cx)}\right)\right)$$

Problem 1056: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(2-5x)\,x^{7/2}}{\sqrt{2+5x+3x^2}}\,dx$$

Optimal (type 4, 223 leaves, 8 steps):

$$-\frac{68920\sqrt{x}\,(2+3x)}{15309\sqrt{2+5x+3x^2}}+\frac{11320\sqrt{x}\sqrt{2+5x+3x^2}}{5103}-$$

$$\frac{820}{567}x^{3/2}\sqrt{2+5x+3x^2}+\frac{508}{567}x^{5/2}\sqrt{2+5x+3x^2}-\frac{10}{27}x^{7/2}\sqrt{2+5x+3x^2}+$$

$$\frac{68920\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\;\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{15309\sqrt{2+5x+3x^2}}-$$

$$\frac{11320\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\;\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{5103\sqrt{2+5x+3x^2}}$$

Result (type 4, 168 leaves):

$$\left(-2\left(68920+138340x+40620x^2-9306x^3+4590x^4-6399x^5+8505x^6\right)-\right.$$

$$68920\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+34960\,i\sqrt{2}$$

$$\left.\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(15309\sqrt{x}\sqrt{2+5x+3x^2}\right)$$

Problem 1057: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 200 leaves, 7 steps):

$$\frac{13688\sqrt{x}\,(2+3x)}{2835\sqrt{2+5x+3x^2}}-\frac{412}{189}\sqrt{x}\sqrt{2+5x+3x^2}+\frac{128}{105}x^{3/2}\sqrt{2+5x+3x^2}-$$

$$\frac{10}{21}x^{5/2}\sqrt{2+5x+3x^2}-\frac{13688\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{2835\sqrt{2+5x+3x^2}}+$$

$$\frac{412\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{189\sqrt{2+5x+3x^2}}$$

Result (type 4, 160 leaves):

$$\left(27376 + 56080\,x + 17076\,x^2 - 3960\,x^3 + 3618\,x^4 - 4050\,x^5 + 13688\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right] - 7508\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(2835\,\sqrt{x}\,\sqrt{2+5\,x+3\,x^2}\right)$$

Problem 1058: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 177 leaves, 6 steps):

$$-\frac{412\,\sqrt{x}\,(2+3\,x)}{81\,\sqrt{2+5\,x+3\,x^2}} + \frac{52}{27}\,\sqrt{x}\,\sqrt{2+5\,x+3\,x^2} - \frac{2}{3}\,x^{3/2}\,\sqrt{2+5\,x+3\,x^2} + \frac{412\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{81\,\sqrt{2+5\,x+3\,x^2}} - \frac{52\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{27\,\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 158 leaves):

$$\left(-2\left(412+874x+282x^2-99x^3+81x^4\right)-\right.$$

$$412\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+$$

$$\left.256\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(81\sqrt{x}\,\sqrt{2+5x+3x^2}\right)$$

Problem 1059: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(2-5x)\sqrt{x}}{\sqrt{2+5x+3x^2}}\,dx$$

Optimal (type 4, 154 leaves, 5 steps):

$$\frac{136\sqrt{x}\,(2+3x)}{27\sqrt{2+5x+3x^2}}-\frac{10}{9}\sqrt{x}\,\sqrt{2+5x+3x^2}-\frac{136\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{27\sqrt{2+5x+3x^2}}+$$

$$\frac{10\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{9\sqrt{2+5x+3x^2}}$$

Result (type 4, 150 leaves):

$$\left(272+620x+258x^2-90x^3+136\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-\right.$$

$$\left.106\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(27\sqrt{x}\,\sqrt{2+5x+3x^2}\right)$$

Problem 1060: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{2-5x}{\sqrt{x}\,\sqrt{2+5x+3x^2}}\,dx$$

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

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

Result (type 4, 150 leaves):

$$-\frac{1}{3\sqrt{2+5x+3x^2}}2x^{3/2}\left(5\left(3+\frac{2}{x^2}+\frac{5}{x}\right)+\frac{5\,\mathrm{i}\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]}{\sqrt{x}}-\frac{8\,\mathrm{i}\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]}{\sqrt{x}}\right)$$

Problem 1061: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{2-5x}{x^{3/2}\sqrt{2+5x+3x^2}}\,dx$$

Optimal (type 4, 146 leaves, 5 steps):

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

Result (type 4, 90 leaves):

$$\frac{1}{\sqrt{2+5x+3x^2}}\mathrm{i}\sqrt{2+\frac{2}{x}}\sqrt{3+\frac{2}{x}}\,x\left(2\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-7\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)$$

Problem 1062: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{2-5x}{x^{5/2}\sqrt{2+5x+3x^2}}\,dx$$

Optimal (type 4, 175 leaves, 6 steps):

$$-\frac{25\sqrt{x}\,(2+3x)}{3\sqrt{2+5x+3x^2}}-\frac{2\sqrt{2+5x+3x^2}}{3x^{3/2}}+\frac{25\sqrt{2+5x+3x^2}}{3\sqrt{x}}+\frac{25\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{3\sqrt{2+5x+3x^2}}-\frac{\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2+5x+3x^2}}$$

Result (type 4, 148 leaves):

$$\left(-2\left(2+5x+3x^2\right)-25\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{5/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+22\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{5/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(3x^{3/2}\sqrt{2+5x+3x^2}\right)$$

Problem 1063: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{2-5x}{x^{7/2}\sqrt{2+5x+3x^2}}\,dx$$

Optimal (type 4, 196 leaves, 7 steps):

$$\frac{66\sqrt{x}\,(2+3x)}{5\sqrt{2+5x+3x^2}}-\frac{2\sqrt{2+5x+3x^2}}{5x^{5/2}}+\frac{3\sqrt{2+5x+3x^2}}{x^{3/2}}-\frac{66\sqrt{2+5x+3x^2}}{5\sqrt{x}}-\frac{66\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{5\sqrt{2+5x+3x^2}}+\frac{9(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2}\sqrt{2+5x+3x^2}}$$

Result (type 4, 150 leaves):

$$\left(-8+40\,x+138\,x^2+90\,x^3+132\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{7/2}\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-87\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{7/2}\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(10\,x^{5/2}\,\sqrt{2+5\,x+3\,x^2}\right)$$

Problem 1064: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 197 leaves, 7 steps):

$$-\frac{24\,\sqrt{x}\,(2+3\,x)}{\sqrt{2+5\,x+3\,x^2}}+\frac{2\,x^{5/2}\,(74+95\,x)}{3\,\sqrt{2+5\,x+3\,x^2}}+20\,\sqrt{x}\,\sqrt{2+5\,x+3\,x^2}-\frac{64}{3}\,x^{3/2}\,\sqrt{2+5\,x+3\,x^2}+\frac{24\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\mathrm{EllipticE}\left[\mathrm{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2+5\,x+3\,x^2}}-\frac{20\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\mathrm{EllipticF}\left[\mathrm{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 156 leaves):

$$\left(-2\left(72+120\,x+22\,x^2-4\,x^3+x^4\right)-72\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+12\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(3\,\sqrt{x}\,\sqrt{2+5\,x+3\,x^2}\right)$$

Problem 1065: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 182 leaves, 6 steps):

$$\frac{1804\sqrt{x}\,(2+3x)}{81\sqrt{2+5x+3x^2}}+\frac{2x^{3/2}\,(74+95x)}{3\sqrt{2+5x+3x^2}}-\frac{580}{27}\sqrt{x}\,\sqrt{2+5x+3x^2}-\frac{1804\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{81\sqrt{2+5x+3x^2}}+\frac{580\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{27\sqrt{2+5x+3x^2}}$$

Result (type 4, 150 leaves):

$$\left(3608+5540x+708x^2-90x^3+1804\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-64\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(81\sqrt{x}\sqrt{2+5x+3x^2}\right)$$

Problem 1066: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 159 leaves, 5 steps):

$$-\frac{200\sqrt{x}\,(2+3x)}{9\sqrt{2+5x+3x^2}}+\frac{2\sqrt{x}\,(74+95x)}{3\sqrt{2+5x+3x^2}}+\frac{200\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{9\sqrt{2+5x+3x^2}}-\frac{74\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{3\sqrt{2+5x+3x^2}}$$

Result (type 4, 145 leaves):

$$\left(-400-556\,x-30\,x^2-200\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\,\frac{3}{2}\right]-\right.$$

$$\left.22\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\,\frac{3}{2}\right]\right)\Bigg/\left(9\,\sqrt{x}\,\sqrt{2+5\,x+3\,x^2}\right)$$

Problem 1067: Result unnecessarily involves imaginary or complex numbers.

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

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

$$\frac{74\,\sqrt{x}\,(2+3\,x)}{3\,\sqrt{2+5\,x+3\,x^2}}-\frac{2\,\sqrt{x}\,(30+37\,x)}{\sqrt{2+5\,x+3\,x^2}}-\frac{74\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],\,-\frac{1}{2}\right]}{3\,\sqrt{2+5\,x+3\,x^2}}+$$

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

Result (type 4, 140 leaves):

$$\left(148+190\,x+74\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\,\frac{3}{2}\right]+\right.$$

$$\left.16\,\mathrm{i}\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\,\frac{3}{2}\right]\right)\Bigg/\left(3\,\sqrt{x}\,\sqrt{2+5\,x+3\,x^2}\right)$$

Problem 1068: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 151 leaves, 5 steps):

$$-\frac{30\sqrt{x}\,(2+3x)}{\sqrt{2+5x+3x^2}}+\frac{2\sqrt{x}\,(38+45x)}{\sqrt{2+5x+3x^2}}+\frac{30\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2+5x+3x^2}}-\frac{37\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2+5x+3x^2}}$$

Result (type 4, 137 leaves):

$$\left(-60-74x-30\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-7\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(\sqrt{x}\sqrt{2+5x+3x^2}\right)$$

Problem 1069: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 172 leaves, 6 steps):

$$\frac{39\sqrt{x}\,(2+3x)}{\sqrt{2+5x+3x^2}}+\frac{2\,(38+45x)}{\sqrt{x}\sqrt{2+5x+3x^2}}-\frac{39\sqrt{2+5x+3x^2}}{\sqrt{x}}-\frac{39\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2+5x+3x^2}}+\frac{45\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2+5x+3x^2}}$$

Result (type 4, 137 leaves):

$$\left(76+90\,x+39\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+\right.$$

$$\left.6\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\bigg/\left(\sqrt{x}\,\sqrt{2+5\,x+3\,x^2}\right)$$

Problem 1070: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 201 leaves, 7 steps):

$$-\frac{170\,\sqrt{x}\,\left(2+3\,x\right)}{3\,\sqrt{2+5\,x+3\,x^2}}+\frac{2\,\left(38+45\,x\right)}{x^{3/2}\,\sqrt{2+5\,x+3\,x^2}}-\frac{115\,\sqrt{2+5\,x+3\,x^2}}{3\,x^{3/2}}+$$

$$\frac{170\,\sqrt{2+5\,x+3\,x^2}}{3\,\sqrt{x}}+\frac{170\,\sqrt{2}\,\left(1+x\right)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{3\,\sqrt{2+5\,x+3\,x^2}}-$$

$$\frac{115\,\left(1+x\right)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2}\,\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 145 leaves):

$$\left(-4-610\,x-690\,x^2-340\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{5/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-\right.$$

$$\left.5\,i\,\sqrt{2}\,\sqrt{1+\frac{1}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{5/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\bigg/\left(6\,x^{3/2}\,\sqrt{2+5\,x+3\,x^2}\right)$$

Problem 1071: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 224 leaves, 8 steps):

$$\frac{2693\sqrt{x}\,(2+3x)}{30\sqrt{2+5x+3x^2}}+\frac{2\,(38+45x)}{x^{5/2}\sqrt{2+5x+3x^2}}-\frac{191\sqrt{2+5x+3x^2}}{5x^{5/2}}+\frac{157\sqrt{2+5x+3x^2}}{3x^{3/2}}-\frac{2693\sqrt{2+5x+3x^2}}{30\sqrt{x}}-\frac{2693\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{15\sqrt{2}\sqrt{2+5x+3x^2}}+\frac{157\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2}\sqrt{2+5x+3x^2}}$$

Result (type 4, 150 leaves) :

$$\left(-12+110x+4412x^2+4710x^3+2693\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{7/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-338\,i\sqrt{2}\sqrt{1+\frac{1}{x}}\sqrt{3+\frac{2}{x}}\,x^{7/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(30x^{5/2}\sqrt{2+5x+3x^2}\right)$$

Problem 1072: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(2-5x)\,x^{13/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$$

Optimal (type 4, 256 leaves, 9 steps) :

$$\frac{2x^{11/2}\,(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{1521056\sqrt{x}\,(2+3x)}{76545\sqrt{2+5x+3x^2}}-\frac{4x^{7/2}\,(1484+1685x)}{27\sqrt{2+5x+3x^2}}+\frac{211144\sqrt{x}\sqrt{2+5x+3x^2}}{5103}-\frac{167336x^{3/2}\sqrt{2+5x+3x^2}}{2835}+\frac{45820}{567}x^{5/2}\sqrt{2+5x+3x^2}+\frac{1521056\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{76545\sqrt{2+5x+3x^2}}-\frac{211144\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{5103\sqrt{2+5x+3x^2}}$$

Result (type 4, 187 leaves) :

$$\left(-2\left(3042112+8876240x+5504080x^2-2967300x^3-2106756x^4+262710x^5-70956x^6+18225x^7\right)-1521056\,i\,\sqrt{2+\frac{2}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\left(2+5x+3x^2\right)\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-1646104\,i\,\sqrt{2+\frac{2}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\left(2+5x+3x^2\right)\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(76545\sqrt{x}\left(2+5x+3x^2\right)^{3/2}\right)$$

Problem 1073: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(2-5x)\,x^{11/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$$

Optimal (type 4, 233 leaves, 8 steps):

$$\frac{2x^{9/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{33608\sqrt{x}\,(2+3x)}{729\sqrt{2+5x+3x^2}}-\frac{8x^{5/2}(773+905x)}{27\sqrt{2+5x+3x^2}}-\frac{16040}{243}\sqrt{x}\,\sqrt{2+5x+3x^2}+\frac{2348}{27}x^{3/2}\sqrt{2+5x+3x^2}-\frac{33608\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{729\sqrt{2+5x+3x^2}}+\frac{16040\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{243\sqrt{2+5x+3x^2}}$$

Result (type 4, 179 leaves):

$$\left(134432+479680\,x+534680\,x^2+161784\,x^3-21276\,x^4+2484\,x^5-486\,x^6+\right.$$
$$33608\,i\,\sqrt{2+\frac{2}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\left(2+5\,x+3\,x^2\right)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\,\frac{3}{2}\right]+14512\,i\,\sqrt{2+\frac{2}{x}}$$
$$\left.\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\left(2+5\,x+3\,x^2\right)\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\,\frac{3}{2}\right]\right)\Bigg/\left(729\,\sqrt{x}\,\left(2+5\,x+3\,x^2\right)^{3/2}\right)$$

Problem 1074: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(2-5\,x)\,x^{9/2}}{\left(2+5\,x+3\,x^2\right)^{5/2}}\,dx$$

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

$$\frac{2\,x^{7/2}\,(74+95\,x)}{9\,\left(2+5\,x+3\,x^2\right)^{3/2}}-\frac{17512\,\sqrt{x}\,(2+3\,x)}{243\,\sqrt{2+5\,x+3\,x^2}}-\frac{4\,x^{3/2}\,(536+645\,x)}{9\,\sqrt{2+5\,x+3\,x^2}}+$$
$$\frac{7540}{81}\,\sqrt{x}\,\sqrt{2+5\,x+3\,x^2}+\frac{17512\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],\,-\frac{1}{2}\right]}{243\,\sqrt{2+5\,x+3\,x^2}}-$$
$$\frac{7540\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],\,-\frac{1}{2}\right]}{81\,\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 177 leaves):

$$\left(-2\left(35024+129880\,x+155660\,x^2+58590\,x^3-1512\,x^4+135\,x^5\right)-\right.$$

$$17512\,i\,\sqrt{2+\frac{2}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\left(2+5\,x+3\,x^2\right)\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-5108\,i\,\sqrt{2+\frac{2}{x}}$$

$$\left.\sqrt{3+\frac{2}{x}}\,x^{3/2}\left(2+5\,x+3\,x^2\right)\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(243\,\sqrt{x}\,\left(2+5\,x+3\,x^2\right)^{3/2}\right)$$

Problem 1075: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 187 leaves, 6 steps):

$$\frac{2\,x^{5/2}\,(74+95\,x)}{9\left(2+5\,x+3\,x^2\right)^{3/2}}+\frac{8020\,\sqrt{x}\,(2+3\,x)}{81\,\sqrt{2+5\,x+3\,x^2}}-\frac{40\,\sqrt{x}\,(167+206\,x)}{27\,\sqrt{2+5\,x+3\,x^2}}-$$

$$\frac{8020\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{81\,\sqrt{2+5\,x+3\,x^2}}+$$

$$\frac{3340\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{27\,\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 169 leaves):

$$\left(32080+120320 x+147100 x^2+58212 x^3-270 x^4+8020 i \sqrt{2+\frac{2}{x}} \sqrt{3+\frac{2}{x}}\, x^{3/2} \left(2+5 x+3 x^2\right) \text{EllipticE}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+2000 i \sqrt{2+\frac{2}{x}} \sqrt{3+\frac{2}{x}}\, x^{3/2} \left(2+5 x+3 x^2\right) \text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(81 \sqrt{x} \left(2+5 x+3 x^2\right)^{3/2}\right)$$

Problem 1076: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 187 leaves, 6 steps):

$$\frac{2 x^{3/2} (74+95 x)}{9 \left(2+5 x+3 x^2\right)^{3/2}}-\frac{3464 \sqrt{x} (2+3 x)}{27 \sqrt{2+5 x+3 x^2}}+\frac{4 \sqrt{x} (715+866 x)}{9 \sqrt{2+5 x+3 x^2}}+\frac{3464 \sqrt{2} (1+x) \sqrt{\frac{2+3 x}{1+x}}\, \text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{27 \sqrt{2+5 x+3 x^2}}-\frac{1430 \sqrt{2} (1+x) \sqrt{\frac{2+3 x}{1+x}}\, \text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{9 \sqrt{2+5 x+3 x^2}}$$

Result (type 4, 167 leaves):

$$\left(-2\left(6928+26060x+32020x^2+12825x^3\right)-3464\,i\sqrt{2+\frac{2}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\left(2+5x+3x^2\right)\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-826\,i\sqrt{2+\frac{2}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\left(2+5x+3x^2\right)\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(27\sqrt{x}\left(2+5x+3x^2\right)^{3/2}\right)$$

Problem 1077: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 187 leaves, 6 steps):

$$\frac{2\sqrt{x}\,(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{1450\sqrt{x}\,(2+3x)}{9\sqrt{2+5x+3x^2}}-\frac{2\sqrt{x}\,(1831+2175x)}{9\sqrt{2+5x+3x^2}}-\frac{1450\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{9\sqrt{2+5x+3x^2}}+\frac{598\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{3\sqrt{2+5x+3x^2}}$$

Result (type 4, 164 leaves):

$$\left(5800+21\,824\,x+26\,830\,x^2+10\,764\,x^3+1450\,i\,\sqrt{2+\frac{2}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\left(2+5\,x+3\,x^2\right)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+344\,i\,\sqrt{2+\frac{2}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\left(2+5\,x+3\,x^2\right)\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\bigg/\left(9\,\sqrt{x}\,\left(2+5\,x+3\,x^2\right)^{3/2}\right)$$

Problem 1078: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 179 leaves, 6 steps):

$$-\frac{2\,\sqrt{x}\,(30+37\,x)}{3\,\left(2+5\,x+3\,x^2\right)^{3/2}}-\frac{198\,\sqrt{x}\,(2+3\,x)}{\sqrt{2+5\,x+3\,x^2}}+\frac{2\,\sqrt{x}\,(250+297\,x)}{\sqrt{2+5\,x+3\,x^2}}+\frac{198\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2+5\,x+3\,x^2}}-\frac{245\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 165 leaves):

$$-\frac{2\,\left(1188+4470\,x+5494\,x^2+2205\,x^3\right)}{3\,\sqrt{x}\,\left(2+5\,x+3\,x^2\right)^{3/2}}-\frac{198\,i\,\sqrt{2+\frac{2}{x}}\,\sqrt{3+\frac{2}{x}}\,x\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]}{\sqrt{2+5\,x+3\,x^2}}-\frac{47\,i\,\sqrt{2+\frac{2}{x}}\,\sqrt{3+\frac{2}{x}}\,x\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]}{\sqrt{2+5\,x+3\,x^2}}$$

Problem 1079: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 185 leaves, 6 steps):

$$\frac{2\sqrt{x}\,(38+45x)}{3\left(2+5x+3x^2\right)^{3/2}}+\frac{715\sqrt{x}\,(2+3x)}{3\sqrt{2+5x+3x^2}}-\frac{5\sqrt{x}\,(361+429x)}{3\sqrt{2+5x+3x^2}}-\frac{715\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{3\sqrt{2+5x+3x^2}}+\frac{295\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2+5x+3x^2}}$$

Result (type 4, 167 leaves):

$$\left(2\left(1430+5383x+6615x^2+2655x^3\right)+715\,i\sqrt{2+\frac{2}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\left(2+5x+3x^2\right)\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]+170\,i\sqrt{2+\frac{2}{x}}\sqrt{3+\frac{2}{x}}\,x^{3/2}\left(2+5x+3x^2\right)\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Bigg/\left(3\sqrt{x}\left(2+5x+3x^2\right)^{3/2}\right)$$

Problem 1080: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 208 leaves, 7 steps):

$$\frac{2\,(38+45\,x)}{3\,\sqrt{x}\,\left(2+5\,x+3\,x^2\right)^{3/2}}-\frac{838\,\sqrt{x}\,(2+3\,x)}{3\,\sqrt{2+5\,x+3\,x^2}}-\frac{1717+2085\,x}{3\,\sqrt{x}\,\sqrt{2+5\,x+3\,x^2}}+\frac{838\,\sqrt{2+5\,x+3\,x^2}}{3\,\sqrt{x}}+\frac{838\,\sqrt{2}\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{3\,\sqrt{2+5\,x+3\,x^2}}-\frac{695\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2}\,\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 167 leaves):

$$\left(-2\,\left(3358+12\,665\,x+15\,576\,x^2+6255\,x^3\right)-1676\,i\,\sqrt{2+\frac{2}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\left(2+5\,x+3\,x^2\right)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-409\,i\,\sqrt{2+\frac{2}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{3/2}\,\left(2+5\,x+3\,x^2\right)\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(6\,\sqrt{x}\,\left(2+5\,x+3\,x^2\right)^{3/2}\right)$$

Problem 1081: Result unnecessarily involves imaginary or complex numbers.

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

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

$$\frac{2\,(38+45\,x)}{3\,x^{3/2}\,\left(2+5\,x+3\,x^2\right)^{3/2}}+\frac{625\,\sqrt{x}\,(2+3\,x)}{2\,\sqrt{2+5\,x+3\,x^2}}-\frac{3\,(181+225\,x)}{x^{3/2}\,\sqrt{2+5\,x+3\,x^2}}+\frac{265\,\sqrt{2+5\,x+3\,x^2}}{x^{3/2}}-\frac{625\,\sqrt{2+5\,x+3\,x^2}}{2\,\sqrt{x}}-\frac{625\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2}\,\sqrt{2+5\,x+3\,x^2}}+\frac{795\,(1+x)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],-\frac{1}{2}\right]}{\sqrt{2}\,\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 169 leaves):

$$\left(-4+7590\,x+28\,806\,x^2+35\,550\,x^3+14\,310\,x^4+\right.$$

$$1875\,\mathrm{i}\,\sqrt{2+\frac{2}{x}}\,\sqrt{3+\frac{2}{x}}\,x^{5/2}\,\left(2+5\,x+3\,x^2\right)\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\,\frac{3}{2}\right]+510\,\mathrm{i}\,\sqrt{2+\frac{2}{x}}$$

$$\left.\sqrt{3+\frac{2}{x}}\,x^{5/2}\,\left(2+5\,x+3\,x^2\right)\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\,\frac{3}{2}\right]\right)\Big/\left(6\,x^{3/2}\,\left(2+5\,x+3\,x^2\right)^{3/2}\right)$$

Problem 1082: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 256 leaves, 9 steps):

$$\frac{2\,\left(38+45\,x\right)}{3\,x^{5/2}\,\left(2+5\,x+3\,x^2\right)^{3/2}}-\frac{9521\,\sqrt{x}\,\left(2+3\,x\right)}{30\,\sqrt{2+5\,x+3\,x^2}}-\frac{1541+1965\,x}{3\,x^{5/2}\,\sqrt{2+5\,x+3\,x^2}}+\frac{1252\,\sqrt{2+5\,x+3\,x^2}}{5\,x^{5/2}}-$$

$$\frac{1733\,\sqrt{2+5\,x+3\,x^2}}{6\,x^{3/2}}+\frac{9521\,\sqrt{2+5\,x+3\,x^2}}{30\,\sqrt{x}}+\frac{9521\,\left(1+x\right)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticE}\left[\text{ArcTan}\left[\sqrt{x}\right],\,-\frac{1}{2}\right]}{15\,\sqrt{2}\,\sqrt{2+5\,x+3\,x^2}}-$$

$$\frac{1733\,\left(1+x\right)\,\sqrt{\frac{2+3\,x}{1+x}}\,\text{EllipticF}\left[\text{ArcTan}\left[\sqrt{x}\right],\,-\frac{1}{2}\right]}{2\,\sqrt{2}\,\sqrt{2+5\,x+3\,x^2}}$$

Result (type 4, 177 leaves):

$$\left(-2\left(12-130x+39836x^2+154195x^3+192342x^4+77985x^5\right)-\right.$$

$$19042\,i\sqrt{2+\frac{2}{x}}\sqrt{3+\frac{2}{x}}\,x^{7/2}\left(2+5x+3x^2\right)\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]-6953\,i\sqrt{2+\frac{2}{x}}$$

$$\left.\sqrt{3+\frac{2}{x}}\,x^{7/2}\left(2+5x+3x^2\right)\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right],\frac{3}{2}\right]\right)\Big/\left(60x^{5/2}\left(2+5x+3x^2\right)^{3/2}\right)$$

Problem 1087: Result unnecessarily involves higher level functions.

$$\int\frac{(e x)^m(A+B x)}{\left(a+b x+c x^2\right)^2}\,dx$$

Optimal (type 5, 318 leaves, 5 steps):

$$\frac{(e x)^{1+m}\left(A b^2-a b B-2 a A c+(A b-2 a B) c x\right)}{a\left(b^2-4 a c\right) e\left(a+b x+c x^2\right)}-$$

$$\left(c\left(A b\left(b+\sqrt{b^2-4 a c}\right)m-2 a\left(b B-2 A c(1-m)+B\sqrt{b^2-4 a c}\,m\right)\right)\right.$$

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

$$\left(a\left(b^2-4 a c\right)^{3/2}\left(b-\sqrt{b^2-4 a c}\right)e(1+m)\right)-$$

$$\left(c\left((A b-2 a B)m+\frac{2 a\left(b B-2 A c(1-m)\right)-A b^2 m}{\sqrt{b^2-4 a c}}\right)(e x)^{1+m}\,\text{Hypergeometric2F1}\left[\right.\right.$$

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

Result (type 6, 583 leaves):

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

Problem 1088: Result more than twice size of optimal antiderivative.

$$\int \left(e x\right)^m \left(A+B x\right) \left(a+b x+c x^2\right)^{5/2} dx$$

Optimal (type 6, 281 leaves, 5 steps):

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

Result (type 6, 4573 leaves):

$$\left(a^2 A \left(b-\sqrt{b^2-4 a c}\right) \left(b+\sqrt{b^2-4 a c}\right) \left(2+m\right) x \left(e x\right)^m \left(b-\sqrt{b^2-4 a c}+2 c x\right)\right.$$
$$\left(b+\sqrt{b^2-4 a c}+2 c x\right) \left(a+x \left(b+c x\right)\right)^2 \text{AppellF1}\left[1+m, -\frac{1}{2}, -\frac{1}{2}, 2+m,\right.$$

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

$$\Bigg(4\,a\,(2+m)\,\text{AppellF1}\Big[1+m,\ -\frac{1}{2},\ -\frac{1}{2},\ 2+m,\ -\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\ \frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\Big]+$$

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

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

$$\Bigg(a\,A\,b\,\left(b-\sqrt{b^2-4\,a\,c}\right)\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,(3+m)\,x^2\,(e\,x)^m\,\left(b-\sqrt{b^2-4\,a\,c}+2\,c\,x\right)$$

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

$$-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\ \frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\Big]\Bigg)\Bigg/\Bigg(2\,c^2\,(2+m)\,\left(a+b\,x+c\,x^2\right)^{5/2}$$

$$\Bigg(4\,a\,(3+m)\,\text{AppellF1}\Big[2+m,\ -\frac{1}{2},\ -\frac{1}{2},\ 3+m,\ -\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\ \frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\Big]+$$

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

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

$$\Bigg(a^2\,B\,\left(b-\sqrt{b^2-4\,a\,c}\right)\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,(3+m)\,x^2\,(e\,x)^m\,\left(b-\sqrt{b^2-4\,a\,c}+2\,c\,x\right)$$

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

$$-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\ \frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\Big]\Bigg)\Bigg/\Bigg(4\,c^2\,(2+m)\,\left(a+b\,x+c\,x^2\right)^{5/2}$$

$$\Bigg(4\,a\,(3+m)\,\text{AppellF1}\Big[2+m,\ -\frac{1}{2},\ -\frac{1}{2},\ 3+m,\ -\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\ \frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\Big]+$$

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

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

$$\Bigg(A\,b^2\,\left(b-\sqrt{b^2-4\,a\,c}\right)\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,(4+m)\,x^3\,(e\,x)^m\,\left(b-\sqrt{b^2-4\,a\,c}+2\,c\,x\right)$$

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

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

$$\Bigg(4\,a\,(4+m)\,\text{AppellF1}\Big[3+m,\ -\frac{1}{2},\ -\frac{1}{2},\ 4+m,\ -\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\ \frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\Big]+$$

$$\left(b+\sqrt{b^2-4\,a\,c}\right)\,x\,\text{AppellF1}\left[4+m,-\frac{1}{2},\frac{1}{2},5+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]+$$

$$\left.\left.\left(b-\sqrt{b^2-4\,a\,c}\right)\,x\,\text{AppellF1}\left[4+m,\frac{1}{2},-\frac{1}{2},5+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\right)+$$

$$\left(a\,b\,B\left(b-\sqrt{b^2-4\,a\,c}\right)\left(b+\sqrt{b^2-4\,a\,c}\right)(4+m)\,x^3\,(e\,x)^m\left(b-\sqrt{b^2-4\,a\,c}+2\,c\,x\right)\right.$$

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

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

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

$$\left(b+\sqrt{b^2-4\,a\,c}\right)\,x\,\text{AppellF1}\left[4+m,-\frac{1}{2},\frac{1}{2},5+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]+$$

$$\left.\left.\left(b-\sqrt{b^2-4\,a\,c}\right)\,x\,\text{AppellF1}\left[4+m,\frac{1}{2},-\frac{1}{2},5+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\right)+$$

$$\left(a\,A\left(b-\sqrt{b^2-4\,a\,c}\right)\left(b+\sqrt{b^2-4\,a\,c}\right)(4+m)\,x^3\,(e\,x)^m\left(b-\sqrt{b^2-4\,a\,c}+2\,c\,x\right)\right.$$

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

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

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

$$\left(b+\sqrt{b^2-4\,a\,c}\right)\,x\,\text{AppellF1}\left[4+m,-\frac{1}{2},\frac{1}{2},5+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]+$$

$$\left.\left.\left(b-\sqrt{b^2-4\,a\,c}\right)\,x\,\text{AppellF1}\left[4+m,\frac{1}{2},-\frac{1}{2},5+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\right)+$$

$$\left(b^2\,B\left(b-\sqrt{b^2-4\,a\,c}\right)\left(b+\sqrt{b^2-4\,a\,c}\right)(5+m)\,x^4\,(e\,x)^m\left(b-\sqrt{b^2-4\,a\,c}+2\,c\,x\right)\right.$$

$$\left(b+\sqrt{b^2-4\,a\,c}+2\,c\,x\right)\left(a+x\,(b+c\,x)\right)^2\,\text{AppellF1}\left[4+m,-\frac{1}{2},-\frac{1}{2},5+m,\right.$$

$$\left.\left.-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\Big/\left(4\,c^2\,(4+m)\left(a+b\,x+c\,x^2\right)^{5/2}\right.$$

$$\left(4\,a\,(5+m)\,\text{AppellF1}\left[4+m,-\frac{1}{2},-\frac{1}{2},5+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]+\right.$$

$$\left(b+\sqrt{b^2-4\,a\,c}\right)\,x\,\text{AppellF1}\left[5+m,-\frac{1}{2},\frac{1}{2},6+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]+$$

$$\left.\left.\left(b-\sqrt{b^2-4\,a\,c}\right)\,x\,\text{AppellF1}\left[5+m,\frac{1}{2},-\frac{1}{2},6+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\right)+$$

$$\left(A\, b\, \left(b-\sqrt{b^2-4\,a\,c}\right)\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,(5+m)\,x^4\,(e\,x)^m\,\left(b-\sqrt{b^2-4\,a\,c}+2\,c\,x\right)\right.$$
$$\left(b+\sqrt{b^2-4\,a\,c}+2\,c\,x\right)\,\left(a+x\,\left(b+c\,x\right)\right)^2\,\text{AppellF1}\left[4+m,-\frac{1}{2},-\frac{1}{2},5+m,\right.$$
$$\left.\left.-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\Big/\left(2\,c\,(4+m)\,\left(a+b\,x+c\,x^2\right)^{5/2}\right.$$
$$\left(4\,a\,(5+m)\,\text{AppellF1}\left[4+m,-\frac{1}{2},-\frac{1}{2},5+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]+\right.$$
$$\left(b+\sqrt{b^2-4\,a\,c}\right)\,x\,\text{AppellF1}\left[5+m,-\frac{1}{2},\frac{1}{2},6+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]+$$
$$\left.\left.\left(b-\sqrt{b^2-4\,a\,c}\right)\,x\,\text{AppellF1}\left[5+m,\frac{1}{2},-\frac{1}{2},6+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\right)+$$
$$\left(a\, B\, \left(b-\sqrt{b^2-4\,a\,c}\right)\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,(5+m)\,x^4\,(e\,x)^m\,\left(b-\sqrt{b^2-4\,a\,c}+2\,c\,x\right)\right.$$
$$\left(b+\sqrt{b^2-4\,a\,c}+2\,c\,x\right)\,\left(a+x\,\left(b+c\,x\right)\right)^2\,\text{AppellF1}\left[4+m,-\frac{1}{2},-\frac{1}{2},5+m,\right.$$
$$\left.\left.-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\Big/\left(2\,c\,(4+m)\,\left(a+b\,x+c\,x^2\right)^{5/2}\right.$$
$$\left(4\,a\,(5+m)\,\text{AppellF1}\left[4+m,-\frac{1}{2},-\frac{1}{2},5+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]+\right.$$
$$\left(b+\sqrt{b^2-4\,a\,c}\right)\,x\,\text{AppellF1}\left[5+m,-\frac{1}{2},\frac{1}{2},6+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]+$$
$$\left.\left.\left(b-\sqrt{b^2-4\,a\,c}\right)\,x\,\text{AppellF1}\left[5+m,\frac{1}{2},-\frac{1}{2},6+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\right)+$$
$$\left(A\, \left(b-\sqrt{b^2-4\,a\,c}\right)\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,(6+m)\,x^5\,(e\,x)^m\,\left(b-\sqrt{b^2-4\,a\,c}+2\,c\,x\right)\right.$$
$$\left(b+\sqrt{b^2-4\,a\,c}+2\,c\,x\right)\,\left(a+x\,\left(b+c\,x\right)\right)^2\,\text{AppellF1}\left[5+m,-\frac{1}{2},-\frac{1}{2},6+m,\right.$$
$$\left.\left.-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\Big/\left(4\,(5+m)\,\left(a+b\,x+c\,x^2\right)^{5/2}\right.$$
$$\left(4\,a\,(6+m)\,\text{AppellF1}\left[5+m,-\frac{1}{2},-\frac{1}{2},6+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]+\right.$$
$$\left(b+\sqrt{b^2-4\,a\,c}\right)\,x\,\text{AppellF1}\left[6+m,-\frac{1}{2},\frac{1}{2},7+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]+$$
$$\left.\left.\left(b-\sqrt{b^2-4\,a\,c}\right)\,x\,\text{AppellF1}\left[6+m,\frac{1}{2},-\frac{1}{2},7+m,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\right)+$$
$$\left(b\, B\, \left(b-\sqrt{b^2-4\,a\,c}\right)\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,(6+m)\,x^5\,(e\,x)^m\,\left(b-\sqrt{b^2-4\,a\,c}+2\,c\,x\right)\right.$$
$$\left(b+\sqrt{b^2-4\,a\,c}+2\,c\,x\right)\,\left(a+x\,\left(b+c\,x\right)\right)^2\,\text{AppellF1}\left[5+m,-\frac{1}{2},-\frac{1}{2},6+m,\right.$$

$$-\frac{2cx}{b+\sqrt{b^2-4ac}},\ \frac{2cx}{-b+\sqrt{b^2-4ac}}\Big]\Big) \Big/ \Big(2c\,(5+m)\,\left(a+bx+cx^2\right)^{5/2}$$
$$\Big(4a\,(6+m)\,\text{AppellF1}\Big[5+m,-\frac{1}{2},-\frac{1}{2},6+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\Big]+$$
$$\left(b+\sqrt{b^2-4ac}\right)x\,\text{AppellF1}\Big[6+m,-\frac{1}{2},\frac{1}{2},7+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\Big]+$$
$$\left(b-\sqrt{b^2-4ac}\right)x\,\text{AppellF1}\Big[6+m,\frac{1}{2},-\frac{1}{2},7+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\Big]\Big)\Big)+$$
$$\Big(B\left(b-\sqrt{b^2-4ac}\right)\left(b+\sqrt{b^2-4ac}\right)(7+m)\,x^6\,(e\,x)^m\left(b-\sqrt{b^2-4ac}+2cx\right)$$
$$\left(b+\sqrt{b^2-4ac}+2cx\right)\left(a+x\,(b+cx)\right)^2\text{AppellF1}\Big[6+m,-\frac{1}{2},-\frac{1}{2},7+m,$$
$$-\frac{2cx}{b+\sqrt{b^2-4ac}},\ \frac{2cx}{-b+\sqrt{b^2-4ac}}\Big]\Big) \Big/ \Big(4\,(6+m)\,\left(a+bx+cx^2\right)^{5/2}$$
$$\Big(4a\,(7+m)\,\text{AppellF1}\Big[6+m,-\frac{1}{2},-\frac{1}{2},7+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\Big]+$$
$$\left(b+\sqrt{b^2-4ac}\right)x\,\text{AppellF1}\Big[7+m,-\frac{1}{2},\frac{1}{2},8+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\Big]+$$
$$\left(b-\sqrt{b^2-4ac}\right)x\,\text{AppellF1}\Big[7+m,\frac{1}{2},-\frac{1}{2},8+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\Big]\Big)\Big)$$

Problem 1089: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 281 leaves, 5 steps):

$$\Big(A\,(e\,x)^{1+m}\left(a+bx+cx^2\right)^{3/2}\text{AppellF1}\Big[1+m,-\frac{3}{2},-\frac{3}{2},2+m,-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\Big]\Big) \Big/$$
$$\left(e\,(1+m)\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)^{3/2}\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)^{3/2}\right)+\Big(B\,(e\,x)^{2+m}\left(a+bx+cx^2\right)^{3/2}$$
$$\text{AppellF1}\Big[2+m,-\frac{3}{2},-\frac{3}{2},3+m,-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\Big]\Big) \Big/$$
$$\left(e^2\,(2+m)\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)^{3/2}\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)^{3/2}\right)$$

Result (type 6, 2211 leaves):

$$\Big(a\,A\left(b-\sqrt{b^2-4ac}\right)\left(b+\sqrt{b^2-4ac}\right)(2+m)\,x\,(e\,x)^m\left(b-\sqrt{b^2-4ac}+2cx\right)$$
$$\left(b+\sqrt{b^2-4ac}+2cx\right)\text{AppellF1}\Big[1+m,-\frac{1}{2},-\frac{1}{2},2+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\Big]\Big) \Big/$$

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

$$\left(b+\sqrt{b^2-4ac}\right) x\,\text{AppellF1}\left[4+m,-\frac{1}{2},\frac{1}{2},5+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\right]+$$
$$\left.\left.\left(b-\sqrt{b^2-4ac}\right) x\,\text{AppellF1}\left[4+m,\frac{1}{2},-\frac{1}{2},5+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\right]\right)\right)+$$
$$\left(A\left(b-\sqrt{b^2-4ac}\right)\left(b+\sqrt{b^2-4ac}\right)(4+m)\,x^3\,(e\,x)^m\left(b-\sqrt{b^2-4ac}+2cx\right)\right.$$
$$\left.\left(b+\sqrt{b^2-4ac}+2cx\right)\text{AppellF1}\left[3+m,-\frac{1}{2},-\frac{1}{2},4+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\right]\right)\Big/$$
$$\left(4c\,(3+m)\sqrt{a+x\,(b+cx)}\right.$$
$$\left(4a\,(4+m)\,\text{AppellF1}\left[3+m,-\frac{1}{2},-\frac{1}{2},4+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\right]+\right.$$
$$\left(b+\sqrt{b^2-4ac}\right) x\,\text{AppellF1}\left[4+m,-\frac{1}{2},\frac{1}{2},5+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\right]+$$
$$\left.\left.\left(b-\sqrt{b^2-4ac}\right) x\,\text{AppellF1}\left[4+m,\frac{1}{2},-\frac{1}{2},5+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\right]\right)\right)+$$
$$\left(B\left(b-\sqrt{b^2-4ac}\right)\left(b+\sqrt{b^2-4ac}\right)(5+m)\,x^4\,(e\,x)^m\left(b-\sqrt{b^2-4ac}+2cx\right)\right.$$
$$\left.\left(b+\sqrt{b^2-4ac}+2cx\right)\text{AppellF1}\left[4+m,-\frac{1}{2},-\frac{1}{2},5+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\right]\right)\Big/$$
$$\left(4c\,(4+m)\sqrt{a+x\,(b+cx)}\right.$$
$$\left(4a\,(5+m)\,\text{AppellF1}\left[4+m,-\frac{1}{2},-\frac{1}{2},5+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\right]+\right.$$
$$\left(b+\sqrt{b^2-4ac}\right) x\,\text{AppellF1}\left[5+m,-\frac{1}{2},\frac{1}{2},6+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\right]+$$
$$\left.\left.\left(b-\sqrt{b^2-4ac}\right) x\,\text{AppellF1}\left[5+m,\frac{1}{2},-\frac{1}{2},6+m,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\right]\right)\right)$$

Problem 1090: Result more than twice size of optimal antiderivative.

$$\int (e\,x)^m\,(A+B\,x)\,\sqrt{a+b\,x+c\,x^2}\,dx$$

Optimal (type 6, 281 leaves, 5 steps):

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

Result (type 6, 644 leaves):

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

Problem 1091: Result more than twice size of optimal antiderivative.

$$\int\frac{(e\,x)^m\,(A+B\,x)}{\sqrt{a+b\,x+c\,x^2}}\,dx$$

Optimal (type 6, 281 leaves, 5 steps):

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

Result (type 6, 614 leaves):

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

Problem 1092: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 281 leaves, 5 steps):

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

Result (type 6, 616 leaves):

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

Problem 1093: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 281 leaves, 5 steps):

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

Result (type 6, 576 leaves) :

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

Problem 1094: Result more than twice size of optimal antiderivative.

$$\int (e\,x)^m\,(A+B\,x)\,\left(a+b\,x+c\,x^2\right)^p\,dx$$

Optimal (type 6, 277 leaves, 5 steps) :

$$\frac{1}{e\,(1+m)}A\,(e\,x)^{1+m}\left(1+\frac{2\,c\,x}{b-\sqrt{b^2-4\,a\,c}}\right)^{-p}\left(1+\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}}\right)^{-p}$$
$$\left(a+b\,x+c\,x^2\right)^p \text{AppellF1}\left[1+m,\,-p,\,-p,\,2+m,\,-\frac{2\,c\,x}{b-\sqrt{b^2-4\,a\,c}},\,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}}\right]+$$
$$\frac{1}{e^2\,(2+m)}B\,(e\,x)^{2+m}\left(1+\frac{2\,c\,x}{b-\sqrt{b^2-4\,a\,c}}\right)^{-p}\left(1+\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}}\right)^{-p}\left(a+b\,x+c\,x^2\right)^p$$
$$\text{AppellF1}\left[2+m,\,-p,\,-p,\,3+m,\,-\frac{2\,c\,x}{b-\sqrt{b^2-4\,a\,c}},\,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}}\right]$$

Result (type 6, 725 leaves):

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

Problem 1095: Result unnecessarily involves higher level functions.

$$\int x^3\,(A+B\,x)\,\left(a+b\,x+c\,x^2\right)^p\,dx$$

Optimal (type 5, 442 leaves, 4 steps):

$$-\frac{\left(b\,B\,(4+p)-A\,c\,(5+2\,p)\right)\,x^2\,\left(a+b\,x+c\,x^2\right)^{1+p}}{2\,c^2\,(2+p)\,(5+2\,p)}+\frac{B\,x^3\,\left(a+b\,x+c\,x^2\right)^{1+p}}{c\,(5+2\,p)}+\left(\left(2\,a\,c\,(3+2\,p)\,\left(b\,B\,(4+p)-A\,c\,(5+2\,p)\right)+b\,(2+p)\,\left(6\,a\,B\,c\,(2+p)-b^2\,B\,\left(12+7\,p+p^2\right)+A\,b\,c\,\left(15+11\,p+2\,p^2\right)\right)-2\,c\,(1+p)\,\left(6\,a\,B\,c\,(2+p)-b^2\,B\,\left(12+7\,p+p^2\right)+A\,b\,c\,\left(15+11\,p+2\,p^2\right)\right)\,x\right)\,\left(a+b\,x+c\,x^2\right)^{1+p}\right)\Big/\left(4\,c^4\,(1+p)\,(2+p)\,(3+2\,p)\,(5+2\,p)\right)-\left(2^{-1+p}\,\left(12\,a^2\,B\,c^2-12\,a\,b^2\,B\,c\,(3+p)+6\,a\,A\,b\,c^2\,(5+2\,p)+b^4\,B\,\left(12+7\,p+p^2\right)-A\,b^3\,c\,\left(15+11\,p+2\,p^2\right)\right)\,\left(-\frac{b-\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}\right)^{-1-p}\,\left(a+b\,x+c\,x^2\right)^{1+p}\,\text{Hypergeometric2F1}\left[-p,\,1+p,\,2+p,\,\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,\sqrt{b^2-4\,a\,c}}\right]\right)\Big/\left(c^4\,\sqrt{b^2-4\,a\,c}\,(1+p)\,(3+2\,p)\,(5+2\,p)\right)$$

Result (type 6, 588 leaves) :

$$-\frac{1}{80\,c}\left(b+\sqrt{b^2-4\,a\,c}\right)\,x^4\,\left(b-\sqrt{b^2-4\,a\,c}+2\,c\,x\right)\,\left(2\,a+\left(b-\sqrt{b^2-4\,a\,c}\right)\,x\right)\,\left(a+x\,(b+c\,x)\right)^{-1+p}\left(-\left(\left(25\,A\,\text{AppellF1}\left[4,\,-p,\,-p,\,5,\,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\,\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\Big/\left(10\,a\,\text{AppellF1}\left[4,\,-p,\,-p,\,5,\,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\,\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]+p\,x\,\left(\left(b-\sqrt{b^2-4\,a\,c}\right)\,\text{AppellF1}\left[5,\,1-p,\,-p,\,6,\,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\,\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]+\left(b+\sqrt{b^2-4\,a\,c}\right)\,\text{AppellF1}\left[5,\,-p,\,1-p,\,6,\,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\,\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\right)\right)+\left(24\,B\,x\,\text{AppellF1}\left[5,\,-p,\,-p,\,6,\,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\,\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\Big/\left(-12\,a\,\text{AppellF1}\left[5,\,-p,\,-p,\,6,\,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\,\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]+p\,x\,\left(\left(-b+\sqrt{b^2-4\,a\,c}\right)\,\text{AppellF1}\left[6,\,1-p,\,-p,\,7,\,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\,\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]-\left(b+\sqrt{b^2-4\,a\,c}\right)\,\text{AppellF1}\left[6,\,-p,\,1-p,\,7,\,-\frac{2\,c\,x}{b+\sqrt{b^2-4\,a\,c}},\,\frac{2\,c\,x}{-b+\sqrt{b^2-4\,a\,c}}\right]\right)\right)\right)$$

Problem 1096: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int x^2\,(A+B\,x)\,\left(a+b\,x+c\,x^2\right)^p\,dx$$

Optimal (type 5, 287 leaves, 3 steps):

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

Result (type 6, 587 leaves):

$$-\frac{1}{48 c}\left(b+\sqrt{b^2-4 a c}\right) x^3 \left(b-\sqrt{b^2-4 a c}+2 c x\right)\left(2 a+\left(b-\sqrt{b^2-4 a c}\right) x\right)\left(a+x (b+c x)\right)^{-1+p}$$
$$\left(-\left(\left(16 A \,\text{AppellF1}\left[3,-p,-p,4,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]\right)\Big/\left(8 a \,\text{AppellF1}\left[3,-p,-p,4,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]+p x\left(\left(b-\sqrt{b^2-4 a c}\right)\text{AppellF1}\left[4,1-p,-p,5,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]+\left(b+\sqrt{b^2-4 a c}\right)\text{AppellF1}\left[4,-p,1-p,5,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]\right)\right)\right)-\right.$$
$$\left.\left(15 B x \,\text{AppellF1}\left[4,-p,-p,5,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]\right)\Big/\left(10 a \,\text{AppellF1}\left[4,-p,-p,5,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]+p x\left(\left(b-\sqrt{b^2-4 a c}\right)\text{AppellF1}\left[5,1-p,-p,6,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]+\left(b+\sqrt{b^2-4 a c}\right)\text{AppellF1}\left[5,-p,1-p,6,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]\right)\right)\right)$$

Problem 1097: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int x (A+B x) \left(a+b x+c x^2\right)^p \, dx$$

Optimal (type 5, 211 leaves, 2 steps):

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

Result (type 6, 588 leaves):

$$-\frac{1}{24 c}\left(b+\sqrt{b^2-4 a c}\right) x^2\left(b-\sqrt{b^2-4 a c}+2 c x\right)\left(2 a+\left(b-\sqrt{b^2-4 a c}\right) x\right)\left(a+x (b+c x)\right)^{-1+p}\left(-\left(\left(9 A\,\text{AppellF1}\left[2,-p,-p,3,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]\right)\Big/\left(6 a\,\text{AppellF1}\left[2,-p,-p,3,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]+p x\left(\left(b-\sqrt{b^2-4 a c}\right)\text{AppellF1}\left[3,1-p,-p,4,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]+\left(b+\sqrt{b^2-4 a c}\right)\text{AppellF1}\left[3,-p,1-p,4,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]\right)\right)\right)+\left(8 B x\,\text{AppellF1}\left[3,-p,-p,4,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]\right)\Big/\left(-8 a\,\text{AppellF1}\left[3,-p,-p,4,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]+p x\left(\left(-b+\sqrt{b^2-4 a c}\right)\text{AppellF1}\left[4,1-p,-p,5,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]-\left(b+\sqrt{b^2-4 a c}\right)\text{AppellF1}\left[4,-p,1-p,5,-\frac{2 c x}{b+\sqrt{b^2-4 a c}},\frac{2 c x}{-b+\sqrt{b^2-4 a c}}\right]\right)\right)\right)$$

Problem 1098: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (A+B x)\left(a+b x+c x^2\right)^p\,dx$$

Optimal (type 5, 158 leaves, 2 steps):

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

Result (type 6, 476 leaves):

$$\frac{1}{4}\left(b-\sqrt{b^2-4ac}+2cx\right)\left(a+x\left(b+cx\right)\right)^p$$
$$\left(\left(3B\left(b+\sqrt{b^2-4ac}\right)x^2\left(2a+\left(b-\sqrt{b^2-4ac}\right)x\right)^2\text{AppellF1}\left[2,-p,-p,3,\right.\right.\right.$$
$$\left.\left.-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\right]\right)\Big/\left(\left(-b+\sqrt{b^2-4ac}\right)\left(b+\sqrt{b^2-4ac}+2cx\right)\right.$$
$$\left(a+x\left(b+cx\right)\right)\left(-6a\,\text{AppellF1}\left[2,-p,-p,3,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\right]+\right.$$
$$px\left(\left(-b+\sqrt{b^2-4ac}\right)\text{AppellF1}\left[3,1-p,-p,4,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\right]-\right.$$
$$\left.\left.\left.\left.\left(b+\sqrt{b^2-4ac}\right)\text{AppellF1}\left[3,-p,1-p,4,-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{-b+\sqrt{b^2-4ac}}\right]\right)\right)\right)\right)+$$
$$\frac{1}{c+cp}2^{1+p}A\left(\frac{b+\sqrt{b^2-4ac}+2cx}{\sqrt{b^2-4ac}}\right)^{-p}\text{Hypergeometric2F1}\left[-p,1+p,2+p,\right.$$
$$\left.\left.\frac{1}{2}-\frac{b}{2\sqrt{b^2-4ac}}-\frac{cx}{\sqrt{b^2-4ac}}\right]\right)$$

Problem 1100: Result more than twice size of optimal antiderivative.

$$\int\frac{(A+Bx)\left(a+bx+cx^2\right)^p}{x^2}\,dx$$

Optimal (type 6, 315 leaves, 5 steps):

$$-\frac{A\left(a+bx+cx^2\right)^{1+p}}{ax}+\frac{1}{ap}2^{-1+2p}\left(aB+Abp\right)\left(\frac{b-\sqrt{b^2-4ac}+2cx}{cx}\right)^{-p}\left(\frac{b+\sqrt{b^2-4ac}+2cx}{cx}\right)^{-p}$$
$$\left(a+bx+cx^2\right)^p\text{AppellF1}\left[-2p,-p,-p,1-2p,-\frac{b-\sqrt{b^2-4ac}}{2cx},-\frac{b+\sqrt{b^2-4ac}}{2cx}\right]-$$
$$\left(2^{1+p}Ac\left(1+2p\right)\left(-\frac{b-\sqrt{b^2-4ac}+2cx}{\sqrt{b^2-4ac}}\right)^{-1-p}\left(a+bx+cx^2\right)^{1+p}\right.$$
$$\left.\text{Hypergeometric2F1}\left[-p,1+p,2+p,\frac{b+\sqrt{b^2-4ac}+2cx}{2\sqrt{b^2-4ac}}\right]\right)\Big/\left(a\sqrt{b^2-4ac}\left(1+p\right)\right)$$

Result (type 6, 733 leaves):

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

Problem 1127: Result more than twice size of optimal antiderivative.

$$\int (A+B\,x)\,(d+e\,x)^m\,\left(b\,x+c\,x^2\right)^3\,dx$$

Optimal (type 3, 484 leaves, 2 steps):

$$-\frac{d^3 (B d - A e) (c d - b e)^3 (d + e x)^{1+m}}{e^8 (1 + m)} + \frac{d^2 (c d - b e)^2 (B d (7 c d - 4 b e) - 3 A e (2 c d - b e)) (d + e x)^{2+m}}{e^8 (2 + m)} + \frac{1}{e^8 (3 + m)} 3 d (c d - b e) (A e (5 c^2 d^2 - 5 b c d e + b^2 e^2) - B d (7 c^2 d^2 - 8 b c d e + 2 b^2 e^2)) (d + e x)^{3+m} + \frac{1}{e^8 (4 + m)} (B d (35 c^3 d^3 - 60 b c^2 d^2 e + 30 b^2 c d e^2 - 4 b^3 e^3) - A e (20 c^3 d^3 - 30 b c^2 d^2 e + 12 b^2 c d e^2 - b^3 e^3)) (d + e x)^{4+m} + \frac{1}{e^8 (5 + m)} (3 A c e (5 c^2 d^2 - 5 b c d e + b^2 e^2) - B (35 c^3 d^3 - 45 b c^2 d^2 e + 15 b^2 c d e^2 - b^3 e^3)) (d + e x)^{5+m} - \frac{3 c (A c e (2 c d - b e) - B (7 c^2 d^2 - 6 b c d e + b^2 e^2)) (d + e x)^{6+m}}{e^8 (6 + m)} - \frac{c^2 (7 B c d - 3 b B e - A c e) (d + e x)^{7+m}}{e^8 (7 + m)} + \frac{B c^3 (d + e x)^{8+m}}{e^8 (8 + m)}$$

Result (type 3, 1043 leaves):

$$\frac{1}{e^8 (1 + m) (2 + m) (3 + m) (4 + m) (5 + m) (6 + m) (7 + m) (8 + m)} (d + e x)^m \Big(-6 d^4 \big(A e (8 + m) (-120 c^3 d^3 + 60 b c^2 d^2 e (7 + m) - 12 b^2 c d e^2 (42 + 13 m + m^2) + b^3 e^3 (210 + 107 m + 18 m^2 + m^3)) + 4 B d (210 c^3 d^3 - 90 b c^2 d^2 e (8 + m) + 15 b^2 c d e^2 (56 + 15 m + m^2) - b^3 e^3 (336 + 146 m + 21 m^2 + m^3))\big) + 6 d^3 e m \big(A e (8 + m) (-120 c^3 d^3 + 60 b c^2 d^2 e (7 + m) - 12 b^2 c d e^2 (42 + 13 m + m^2) + b^3 e^3 (210 + 107 m + 18 m^2 + m^3)) + 4 B d (210 c^3 d^3 - 90 b c^2 d^2 e (8 + m) + 15 b^2 c d e^2 (56 + 15 m + m^2) - b^3 e^3 (336 + 146 m + 21 m^2 + m^3))\big) x - 3 d^2 e^2 m (1 + m) \big(A e (8 + m) (-120 c^3 d^3 + 60 b c^2 d^2 e (7 + m) - 12 b^2 c d e^2 (42 + 13 m + m^2) + b^3 e^3 (210 + 107 m + 18 m^2 + m^3)) + 4 B d (210 c^3 d^3 - 90 b c^2 d^2 e (8 + m) + 15 b^2 c d e^2 (56 + 15 m + m^2) - b^3 e^3 (336 + 146 m + 21 m^2 + m^3))\big) x^2 + d e^3 m (1 + m) (2 + m) \big(A e (8 + m) (-120 c^3 d^3 + 60 b c^2 d^2 e (7 + m) - 12 b^2 c d e^2 (42 + 13 m + m^2) + b^3 e^3 (210 + 107 m + 18 m^2 + m^3)) + 4 B d (210 c^3 d^3 - 90 b c^2 d^2 e (8 + m) + 15 b^2 c d e^2 (56 + 15 m + m^2) - b^3 e^3 (336 + 146 m + 21 m^2 + m^3))\big) x^3 + e^4 (1 + m) (2 + m) (3 + m) \big(A e (8 + m) (30 c^3 d^3 m - 15 b c^2 d^2 e m (7 + m) + 3 b^2 c d e^2 m (42 + 13 m + m^2) + b^3 e^3 (210 + 107 m + 18 m^2 + m^3)) + B d m (-210 c^3 d^3 + 90 b c^2 d^2 e (8 + m) - 15 b^2 c d e^2 (56 + 15 m + m^2) + b^3 e^3 (336 + 146 m + 21 m^2 + m^3))\big) x^4 + e^5 (1 + m) (2 + m) (3 + m) (4 + m) \big(b^3 B e^3 (336 + 146 m + 21 m^2 + m^3) + 3 b^2 c e^2 (56 + 15 m + m^2) (B d m + A e (6 + m)) + 3 b c^2 d e m (8 + m) (-6 B d + A e (7 + m)) - 6 c^3 d^2 m (-7 B d + A e (8 + m))\big) x^5 + c e^6 (1 + m) (2 + m) (3 + m) (4 + m) (5 + m) \big(3 b^2 B e^2 (56 + 15 m + m^2) + 3 b c e (8 + m) (B d m + A e (7 + m)) + c^2 d m (-7 B d + A e (8 + m))\big) x^6 + c^2 e^7 (1 + m) (2 + m) (3 + m) (4 + m) (5 + m) (6 + m) (B c d m + 3 b B e (8 + m) + A c e (8 + m)) x^7 + B c^3 e^8 (1 + m) (2 + m) (3 + m) (4 + m) (5 + m) (6 + m) (7 + m) x^8\Big)$$

Problem 1255: Result unnecessarily involves imaginary or complex numbers.

$$\int (A+B x) \sqrt{d+e x} \sqrt{b x+c x^2} \, dx$$

Optimal (type 4, 433 leaves, 9 steps):

$$\frac{1}{105 c^2 e^2} 2 \sqrt{d+e x} \left(7 A c e (c d+b e)-B \left(4 c^2 d^2-2 b c d e+4 b^2 e^2\right)+3 c e (B c d-4 b B e+7 A c e) x\right) \sqrt{b x+c x^2}+\frac{2 B \sqrt{d+e x} \left(b x+c x^2\right)^{3/2}}{7 c}+\left(2 \sqrt{-b} \left(5 c (3 b B-7 A c) d e (2 c d-b e)+(B c d-4 b B e+7 A c e) \left(8 c^2 d^2-3 b c d e-2 b^2 e^2\right)\right) \sqrt{x} \sqrt{1+\frac{c x}{b}} \sqrt{d+e x} \, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c} \sqrt{x}}{\sqrt{-b}}\right], \frac{b e}{c d}\right]\right) \Big/ \left(105 c^{5/2} e^3 \sqrt{1+\frac{e x}{d}} \sqrt{b x+c x^2}\right)+\left(2 \sqrt{-b} d (c d-b e) \left(7 A c e (2 c d-b e)-B \left(8 c^2 d^2-b c d e-4 b^2 e^2\right)\right) \sqrt{x} \sqrt{1+\frac{c x}{b}} \sqrt{1+\frac{e x}{d}} \, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c} \sqrt{x}}{\sqrt{-b}}\right], \frac{b e}{c d}\right]\right) \Big/ \left(105 c^{5/2} e^3 \sqrt{d+e x} \sqrt{b x+c x^2}\right)$$

Result (type 4, 461 leaves):

$$-\frac{1}{105 b c^2 e^3 \sqrt{x (b+c x)} \sqrt{d+e x}} 2 \left(b e x (b+c x) (d+e x) \left(-7 A c e (b e+c (d+3 e x))+B \left(4 b^2 e^2-b c e (2 d+3 e x)+c^2 \left(4 d^2-3 d e x-15 e^2 x^2\right)\right)\right)+\sqrt{\frac{b}{c}} \left(\sqrt{\frac{b}{c}} \left(14 A c e \left(c^2 d^2-b c d e+b^2 e^2\right)+B \left(-8 c^3 d^3+5 b c^2 d^2 e+5 b^2 c d e^2-8 b^3 e^3\right)\right) (b+c x) (d+e x)+i b e \left(14 A c e \left(c^2 d^2-b c d e+b^2 e^2\right)+B \left(-8 c^3 d^3+5 b c^2 d^2 e+5 b^2 c d e^2-8 b^3 e^3\right)\right) \sqrt{1+\frac{b}{c x}} \sqrt{1+\frac{d}{e x}} x^{3/2} \, \text{EllipticE}\left[i \, \text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right], \frac{c d}{b e}\right]-i b e (c d-b e) \left(7 A c e (c d-2 b e)-B \left(4 c^2 d^2+b c d e-8 b^2 e^2\right)\right) \sqrt{1+\frac{b}{c x}} \sqrt{1+\frac{d}{e x}} x^{3/2} \, \text{EllipticF}\left[i \, \text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right], \frac{c d}{b e}\right]\right)\right)$$

Problem 1256: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 318 leaves, 8 steps):

$$-\frac{2 \sqrt{d+e x} \left(4 B c d-b B e-5 A c e-3 B c e x\right) \sqrt{b x+c x^2}}{15 c e^2}-$$
$$\left(2 \sqrt{-b} \left(5 A c e \left(2 c d-b e\right)-B \left(8 c^2 d^2-3 b c d e-2 b^2 e^2\right)\right) \sqrt{x} \sqrt{1+\frac{c x}{b}} \sqrt{d+e x}\right.$$
$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c} \sqrt{x}}{\sqrt{-b}}\right], \frac{b e}{c d}\right]\right) \Big/ \left(15 c^{3/2} e^3 \sqrt{1+\frac{e x}{d}} \sqrt{b x+c x^2}\right) -$$
$$\left(2 \sqrt{-b} \, d \left(c d-b e\right) \left(8 B c d+b B e-10 A c e\right) \sqrt{x} \sqrt{1+\frac{c x}{b}} \sqrt{1+\frac{e x}{d}}\right.$$
$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c} \sqrt{x}}{\sqrt{-b}}\right], \frac{b e}{c d}\right]\right) \Big/ \left(15 c^{3/2} e^3 \sqrt{d+e x} \sqrt{b x+c x^2}\right)$$

Result (type 4, 344 leaves):

$$-\frac{1}{15 b c e^3 \sqrt{x \left(b+c x\right)} \sqrt{d+e x}} 2 \left(-b e x \left(b+c x\right) \left(d+e x\right) \left(5 A c e+B \left(-4 c d+b e+3 c e x\right)\right)-\right.$$
$$\sqrt{\frac{b}{c}} \left(\sqrt{\frac{b}{c}} \left(5 A c e \left(-2 c d+b e\right)+B \left(8 c^2 d^2-3 b c d e-2 b^2 e^2\right)\right) \left(b+c x\right) \left(d+e x\right)-\right.$$
$$i b e \left(5 A c e \left(2 c d-b e\right)+B \left(-8 c^2 d^2+3 b c d e+2 b^2 e^2\right)\right) \sqrt{1+\frac{b}{c x}} \sqrt{1+\frac{d}{e x}} \, x^{3/2}$$
$$\text{EllipticE}\left[i \, \text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right], \frac{c d}{b e}\right]+i b e \left(c d-b e\right) \left(5 A c e-2 B \left(2 c d+b e\right)\right)$$
$$\left.\left.\sqrt{1+\frac{b}{c x}} \sqrt{1+\frac{d}{e x}} \, x^{3/2} \, \text{EllipticF}\left[i \, \text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right], \frac{c d}{b e}\right]\right)\right)$$

Problem 1257: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(A+B x)\sqrt{b x+c x^2}}{(d+e x)^{3/2}}\,dx$$

Optimal (type 4, 283 leaves, 8 steps):

$$\frac{2\left(4 B d-3 A e+B e x\right)\sqrt{b x+c x^2}}{3 e^2\sqrt{d+e x}}-\left(2\sqrt{-b}\left(8 B c d-b B e-6 A c e\right)\sqrt{x}\sqrt{1+\frac{c x}{b}}\sqrt{d+e x}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(3\sqrt{c}\,e^3\sqrt{1+\frac{e x}{d}}\sqrt{b x+c x^2}\right)+\left(2\sqrt{-b}\left(B d\left(8 c d-5 b e\right)-3 A e\left(2 c d-b e\right)\right)\sqrt{x}\sqrt{1+\frac{c x}{b}}\sqrt{1+\frac{e x}{d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(3\sqrt{c}\,e^3\sqrt{d+e x}\sqrt{b x+c x^2}\right)$$

Result (type 4, 269 leaves):

$$\left(2\left(b e x\left(b+c x\right)\left(4 B d-3 A e+B e x\right)+\sqrt{\frac{b}{c}}\left(\sqrt{\frac{b}{c}}\left(-8 B c d+b B e+6 A c e\right)\left(b+c x\right)\left(d+e x\right)-i\, b e\left(8 B c d-b B e-6 A c e\right)\sqrt{1+\frac{b}{c x}}\sqrt{1+\frac{d}{e x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c d}{b e}\right]+i\, b e\left(4 B c d-b B e-3 A c e\right)\sqrt{1+\frac{b}{c x}}\sqrt{1+\frac{d}{e x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c d}{b e}\right]\right)\right)\right)\Big/\left(3 b e^3\sqrt{x\left(b+c x\right)}\sqrt{d+e x}\right)$$

Problem 1258: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 346 leaves, 8 steps):

$$-\left(\left(2\left(d^2\,(4\,B\,c\,d-3\,b\,B\,e-A\,c\,e)+e\,(B\,d\,(5\,c\,d-4\,b\,e)-A\,e\,(2\,c\,d-b\,e))\,x\right)\sqrt{b\,x+c\,x^2}\right)\Big/\left(3\,d\,e^2\,(c\,d-b\,e)\,(d+e\,x)^{3/2}\right)\right)+$$

$$\left(2\sqrt{-b}\,\sqrt{c}\,(B\,d\,(8\,c\,d-7\,b\,e)-A\,e\,(2\,c\,d-b\,e))\,\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{d+e\,x}\;\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left(3\,d\,e^3\,(c\,d-b\,e)\,\sqrt{1+\frac{e\,x}{d}}\,\sqrt{b\,x+c\,x^2}\right)-$$

$$\left(2\sqrt{-b}\,(8\,B\,c\,d-3\,b\,B\,e-2\,A\,c\,e)\,\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{1+\frac{e\,x}{d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left(3\,\sqrt{c}\,e^3\,\sqrt{d+e\,x}\,\sqrt{b\,x+c\,x^2}\right)$$

Result (type 4, 346 leaves):

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

$$\left(2\left(\sqrt{\frac{b}{c}}\;e\,x\,(b+c\,x)\,\left(A\,e\,\left(-b\,e^2\,x+c\,d\,(d+2\,e\,x)\right)+B\,d\,(b\,e\,(3\,d+4\,e\,x)-c\,d\,(4\,d+5\,e\,x))\right)+\right.\right.$$

$$(d+e\,x)\left(\sqrt{\frac{b}{c}}\;(B\,d\,(8\,c\,d-7\,b\,e)+A\,e\,(-2\,c\,d+b\,e))\,(b+c\,x)\,(d+e\,x)-i\,b\,e\,(A\,e\,(2\,c\,d-b\,e)+\right.$$

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

$$\left.\left.i\,b\,e\,(4\,B\,d-A\,e)\,(c\,d-b\,e)\,\sqrt{1+\frac{b}{c\,x}}\,\sqrt{1+\frac{d}{e\,x}}\;x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]\right)\right)$$

Problem 1259: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(A+B\,x)\,\sqrt{b\,x+c\,x^2}}{(d+e\,x)^{7/2}}\,dx$$

Optimal (type 4, 494 leaves, 9 steps):

$$\left(2\left(2 A e\left(c^2 d^2-b c d e+b^2 e^2\right)+B d\left(8 c^2 d^2-13 b c d e+3 b^2 e^2\right)\right)\sqrt{b x+c x^2}\right)\Big/\left(15 d^2 e^2 (c d-b e)^2\sqrt{d+e x}\right)-$$
$$\left(2\left(d\left(B d(4 c d-3 b e)+A e(c d-2 b e)\right)+e\left(B d(7 c d-6 b e)-A e(2 c d-b e)\right)x\right)\sqrt{b x+c x^2}\right)\Big/\left(15 d e^2 (c d-b e)(d+e x)^{5/2}\right)-$$
$$\left(2\sqrt{-b}\sqrt{c}\left(2 A e\left(c^2 d^2-b c d e+b^2 e^2\right)+B d\left(8 c^2 d^2-13 b c d e+3 b^2 e^2\right)\right)\sqrt{x}\sqrt{1+\frac{c x}{b}}\sqrt{d+e x}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(15 d^2 e^3 (c d-b e)^2\sqrt{1+\frac{e x}{d}}\sqrt{b x+c x^2}\right)+$$
$$\left(2\sqrt{-b}\sqrt{c}\left(B d(8 c d-9 b e)+A e(2 c d-b e)\right)\sqrt{x}\sqrt{1+\frac{c x}{b}}\sqrt{1+\frac{e x}{d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(15 d e^3 (c d-b e)\sqrt{d+e x}\sqrt{b x+c x^2}\right)$$

Result (type 4, 491 leaves):

$$\frac{1}{15 b d^2 e^3 (c d-b e)^2\sqrt{x(b+c x)}\,(d+e x)^{5/2}}2\Bigg(b e x(b+c x)\Big(3 d^2(B d-A e)(c d-b e)^2-d(c d-b e)\left(B d(7 c d-6 b e)+A e(-2 c d+b e)\right)(d+e x)+\left(2 A e\left(c^2 d^2-b c d e+b^2 e^2\right)+B d\left(8 c^2 d^2-13 b c d e+3 b^2 e^2\right)\right)(d+e x)^2\Big)-$$
$$\sqrt{\frac{b}{c}}\,c\,(d+e x)^2\Bigg(\sqrt{\frac{b}{c}}\left(2 A e\left(c^2 d^2-b c d e+b^2 e^2\right)+B d\left(8 c^2 d^2-13 b c d e+3 b^2 e^2\right)\right)(b+c x)(d+e x)+i\,b e\left(2 A e\left(c^2 d^2-b c d e+b^2 e^2\right)+B d\left(8 c^2 d^2-13 b c d e+3 b^2 e^2\right)\right)\sqrt{1+\frac{b}{c x}}\sqrt{1+\frac{d}{e x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c d}{b e}\right]-$$
$$i\,b e(c d-b e)\left(B d(4 c d-3 b e)+A e(c d-2 b e)\right)\sqrt{1+\frac{b}{c x}}\sqrt{1+\frac{d}{e x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c d}{b e}\right]\Bigg)\Bigg)$$

Problem 1260: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 574 leaves, 9 steps):

$$\frac{1}{315 c^2 e^4} 2 \sqrt{d+e x} \left(9 A c e \left(8 c^2 d^2-11 b c d e+b^2 e^2\right)-2 B \left(32 c^3 d^3-42 b c^2 d^2 e+3 b^2 c d e^2+2 b^3 e^3\right)-3 c e \left(9 A c e (2 c d-b e)-B \left(16 c^2 d^2-7 b c d e-4 b^2 e^2\right)\right) x\right) \sqrt{b x+c x^2}-\frac{2 \sqrt{d+e x} (8 B c d-3 b B e-9 A c e-7 B c e x) \left(b x+c x^2\right)^{3/2}}{63 c e^2}-\left(2 \sqrt{-b} \left(5 b c d e (2 c d-b e) (8 B c d-3 b B e-9 A c e)+\left(8 c^2 d^2-3 b c d e-2 b^2 e^2\right) \left(9 A c e (2 c d-b e)-B \left(16 c^2 d^2-7 b c d e-4 b^2 e^2\right)\right)\right) \sqrt{x} \sqrt{1+\frac{c x}{b}} \sqrt{d+e x} \, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c} \sqrt{x}}{\sqrt{-b}}\right], \frac{b e}{c d}\right]\right) \Big/ \left(315 c^{5/2} e^5 \sqrt{1+\frac{e x}{d}} \sqrt{b x+c x^2}\right)+\left(2 \sqrt{-b} d (c d-b e) \left(9 A c e \left(16 c^2 d^2-16 b c d e-b^2 e^2\right)-B \left(128 c^3 d^3-120 b c^2 d^2 e-9 b^2 c d e^2-4 b^3 e^3\right)\right) \sqrt{x} \sqrt{1+\frac{c x}{b}} \sqrt{1+\frac{e x}{d}} \, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c} \sqrt{x}}{\sqrt{-b}}\right], \frac{b e}{c d}\right]\right) \Big/ \left(315 c^{5/2} e^5 \sqrt{d+e x} \sqrt{b x+c x^2}\right)$$

Result (type 4, 630 leaves):

$$-\frac{1}{315\, b\, c^2\, e^5\, x^2\, (b+c\, x)^2\, \sqrt{d+e\, x}}\, 2\, (x\, (b+c\, x))^{3/2}$$
$$\Bigg(b\, e\, x\, (b+c\, x)\, (d+e\, x)\, \big(-9\, A\, c\, e\, \big(b^2\, e^2+b\, c\, e\, (-11\, d+8\, e\, x)+c^2\, \big(8\, d^2-6\, d\, e\, x+5\, e^2\, x^2\big)\big)+$$
$$B\, \big(4\, b^3\, e^3-3\, b^2\, c\, e^2\, (-2\, d+e\, x)+b\, c^2\, e\, \big(-84\, d^2+61\, d\, e\, x-50\, e^2\, x^2\big)+$$
$$c^3\, \big(64\, d^3-48\, d^2\, e\, x+40\, d\, e^2\, x^2-35\, e^3\, x^3\big)\big)\big)+$$
$$\sqrt{\frac{b}{c}}\, \Bigg(\sqrt{\frac{b}{c}}\, \big(18\, A\, c\, e\, \big(8\, c^3\, d^3-12\, b\, c^2\, d^2\, e+2\, b^2\, c\, d\, e^2+b^3\, e^3\big)-$$
$$B\, \big(128\, c^4\, d^4-184\, b\, c^3\, d^3\, e+27\, b^2\, c^2\, d^2\, e^2+11\, b^3\, c\, d\, e^3+8\, b^4\, e^4\big)\big)\, (b+c\, x)\, (d+e\, x)+$$
$$i\, b\, e\, \big(18\, A\, c\, e\, \big(8\, c^3\, d^3-12\, b\, c^2\, d^2\, e+2\, b^2\, c\, d\, e^2+b^3\, e^3\big)-$$
$$B\, \big(128\, c^4\, d^4-184\, b\, c^3\, d^3\, e+27\, b^2\, c^2\, d^2\, e^2+11\, b^3\, c\, d\, e^3+8\, b^4\, e^4\big)\big)$$
$$\sqrt{1+\frac{b}{c\, x}}\, \sqrt{1+\frac{d}{e\, x}}\, x^{3/2}\, \text{EllipticE}\Big[i\, \text{ArcSinh}\Big[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\Big],\, \frac{c\, d}{b\, e}\Big]-i\, b\, e\, (c\, d-b\, e)$$
$$\big(9\, A\, c\, e\, \big(8\, c^2\, d^2-5\, b\, c\, d\, e-2\, b^2\, e^2\big)+B\, \big(-64\, c^3\, d^3+36\, b\, c^2\, d^2\, e+15\, b^2\, c\, d\, e^2+8\, b^3\, e^3\big)\big)$$
$$\sqrt{1+\frac{b}{c\, x}}\, \sqrt{1+\frac{d}{e\, x}}\, x^{3/2}\, \text{EllipticF}\Big[i\, \text{ArcSinh}\Big[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\Big],\, \frac{c\, d}{b\, e}\Big]\Bigg)\Bigg)$$

Problem 1261: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(A+B\, x)\, \big(b\, x+c\, x^2\big)^{3/2}}{(d+e\, x)^{3/2}}\, dx$$

Optimal (type 4, 449 leaves, 9 steps):

$$-\frac{1}{35\,c\,e^4}2\sqrt{d+e\,x}\,\left(7\,A\,c\,e\,(8\,c\,d-7\,b\,e)-B\,\left(64\,c^2\,d^2-60\,b\,c\,d\,e+b^2\,e^2\right)+3\,c\,e\,(16\,B\,c\,d-b\,B\,e-14\,A\,c\,e)\,x\right)$$

$$\sqrt{b\,x+c\,x^2}+\frac{2\,(8\,B\,d-7\,A\,e+B\,e\,x)\,\left(b\,x+c\,x^2\right)^{3/2}}{7\,e^2\,\sqrt{d+e\,x}}+$$

$$\left(2\,\sqrt{-b}\,\left(5\,b\,c\,e\,(8\,B\,d-7\,A\,e)\,(2\,c\,d-b\,e)-(16\,B\,c\,d-b\,B\,e-14\,A\,c\,e)\,\left(8\,c^2\,d^2-3\,b\,c\,d\,e-2\,b^2\,e^2\right)\right)\right.$$

$$\left.\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{d+e\,x}\;\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/$$

$$\left(35\,c^{3/2}\,e^5\,\sqrt{1+\frac{e\,x}{d}}\,\sqrt{b\,x+c\,x^2}\right)-$$

$$\left(2\,\sqrt{-b}\,d\,(c\,d-b\,e)\,\left(56\,A\,c\,e\,(2\,c\,d-b\,e)-B\,\left(128\,c^2\,d^2-72\,b\,c\,d\,e-b^2\,e^2\right)\right)\,\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\right.$$

$$\left.\sqrt{1+\frac{e\,x}{d}}\;\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left(35\,c^{3/2}\,e^5\,\sqrt{d+e\,x}\,\sqrt{b\,x+c\,x^2}\right)$$

Result (type 4, 514 leaves) :

$$\frac{1}{35\, b\, c\, e^5\, x^2\, (b+c\, x)^2 \sqrt{d+e\, x}}\, 2\, (x\, (b+c\, x))^{3/2} \Bigg(b\, e\, x\, (b+c\, x) \Big(35\, c\, d\, (B\, d-A\, e)\, (c\, d-b\, e) + \big(7\, A\, c\, e\, (-3\, c\, d+2\, b\, e) + B\, (29\, c^2\, d^2-25\, b\, c\, d\, e+b^2\, e^2)\big)\, (d+e\, x) + c\, e\, (-13\, B\, c\, d+8\, b\, B\, e+7\, A\, c\, e)\, x\, (d+e\, x) + 5\, B\, c^2\, e^2\, x^2\, (d+e\, x)\Big) + \sqrt{\frac{b}{c}} \Bigg(\sqrt{\frac{b}{c}}\, \big(7\, A\, c\, e\, (16\, c^2\, d^2-16\, b\, c\, d\, e+b^2\, e^2) - B\, (128\, c^3\, d^3-136\, b\, c^2\, d^2\, e+11\, b^2\, c\, d\, e^2+2\, b^3\, e^3)\big)\, (b+c\, x)\, (d+e\, x) + i\, b\, e\, \big(7\, A\, c\, e\, (16\, c^2\, d^2-16\, b\, c\, d\, e+b^2\, e^2) - B\, (128\, c^3\, d^3-136\, b\, c^2\, d^2\, e+11\, b^2\, c\, d\, e^2+2\, b^3\, e^3)\big) \sqrt{1+\frac{b}{c\, x}} \sqrt{1+\frac{d}{e\, x}}\, x^{3/2}\, \text{EllipticE}\Big[i\, \text{ArcSinh}\Big[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\Big], \frac{c\, d}{b\, e}\Big] - i\, b\, e\, (c\, d-b\, e)\, \big(7\, A\, c\, e\, (8\, c\, d-b\, e) + 2\, B\, (-32\, c^2\, d^2+6\, b\, c\, d\, e+b^2\, e^2)\big) \sqrt{1+\frac{b}{c\, x}} \sqrt{1+\frac{d}{e\, x}}\, x^{3/2}\, \text{EllipticF}\Big[i\, \text{ArcSinh}\Big[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\Big], \frac{c\, d}{b\, e}\Big] \Bigg) \Bigg)$$

Problem 1262: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 413 leaves, 9 steps):

$$-\frac{1}{15 e^4 \sqrt{d+e x}} 2 \left(4 B d (16 c d-9 b e)-5 A e (8 c d-3 b e)+e (16 B c d-3 b B e-10 A c e) x\right) \sqrt{b x+c x^2}+\frac{2 (8 B d-5 A e+3 B e x) \left(b x+c x^2\right)^{3/2}}{15 e^2 (d+e x)^{3/2}}-$$

$$\left(2 \sqrt{-b} \left(40 A c e (2 c d-b e)-B \left(128 c^2 d^2-88 b c d e+3 b^2 e^2\right)\right) \sqrt{x} \sqrt{1+\frac{c x}{b}} \sqrt{d+e x} \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c} \sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(15 \sqrt{c} e^5 \sqrt{1+\frac{e x}{d}} \sqrt{b x+c x^2}\right)+$$

$$\left(2 \sqrt{-b} \left(5 A e \left(16 c^2 d^2-16 b c d e+3 b^2 e^2\right)-B d \left(128 c^2 d^2-152 b c d e+39 b^2 e^2\right)\right) \sqrt{x} \sqrt{1+\frac{c x}{b}} \sqrt{1+\frac{e x}{d}} \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c} \sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(15 \sqrt{c} e^5 \sqrt{d+e x} \sqrt{b x+c x^2}\right)$$

Result (type 4, 436 leaves):

$$\frac{1}{15 e^5 x^2 (b+c x)^2 \sqrt{d+e x}} 2 (x (b+c x))^{3/2} \left(\frac{1}{c}\left(40 A c e (-2 c d+b e)+B \left(128 c^2 d^2-88 b c d e+3 b^2 e^2\right)\right) (b+c x) (d+e x)+\right.$$

$$\frac{1}{d+e x} e x (b+c x) \left(5 A e \left(-b e (3 d+4 e x)+c \left(8 d^2+10 d e x+e^2 x^2\right)\right)+B \left(b e \left(36 d^2+47 d e x+6 e^2 x^2\right)-c \left(64 d^3+80 d^2 e x+8 d e^2 x^2-3 e^3 x^3\right)\right)\right)-$$

$$i \sqrt{\frac{b}{c}} e \left(40 A c e (2 c d-b e)+B \left(-128 c^2 d^2+88 b c d e-3 b^2 e^2\right)\right) \sqrt{1+\frac{b}{c x}} \sqrt{1+\frac{d}{e x}} x^{3/2} \text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c d}{b e}\right]+$$

$$\left. i \sqrt{\frac{b}{c}} e \left(5 A c e (8 c d-5 b e)+B \left(-64 c^2 d^2+52 b c d e-3 b^2 e^2\right)\right) \sqrt{1+\frac{b}{c x}} \sqrt{1+\frac{d}{e x}} x^{3/2} \text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c d}{b e}\right]\right)$$

Problem 1263: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 516 leaves, 9 steps):

$$-\left(\left(2\left(d\left(3 A c e\left(8 c d-7 b e\right)-B\left(64 c^2 d^2-76 b c d e+15 b^2 e^2\right)\right)-c e\left(B d\left(16 c d-13 b e\right)-3 A e\left(2 c d-b e\right)\right) x\right)\sqrt{b x+c x^2}\right)\Big/\left(15 d e^4\left(c d-b e\right)\sqrt{d+e x}\right)\right)-\left(2\left(d^2\left(8 B c d-5 b B e-3 A c e\right)+e\left(B d\left(11 c d-8 b e\right)-3 A e\left(2 c d-b e\right)\right) x\right)\left(b x+c x^2\right)^{3/2}\right)\Big/\left(15 d e^2\left(c d-b e\right)\left(d+e x\right)^{5/2}\right)+\left(2\sqrt{-b}\sqrt{c}\left(3 A e\left(16 c^2 d^2-16 b c d e+b^2 e^2\right)-B d\left(128 c^2 d^2-168 b c d e+43 b^2 e^2\right)\right)\sqrt{x}\sqrt{1+\frac{c x}{b}}\sqrt{d+e x}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(15 d e^5\left(c d-b e\right)\sqrt{1+\frac{e x}{d}}\sqrt{b x+c x^2}\right)-\left(2\sqrt{-b}\left(24 A c e\left(2 c d-b e\right)-B\left(128 c^2 d^2-104 b c d e+15 b^2 e^2\right)\right)\sqrt{x}\sqrt{1+\frac{c x}{b}}\sqrt{1+\frac{e x}{d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(15\sqrt{c}\,e^5\sqrt{d+e x}\sqrt{b x+c x^2}\right)$$

Result (type 4, 530 leaves):

$$\frac{1}{15\sqrt{\frac{b}{c}}\,d\,e^5\,(c\,d-b\,e)\,x^2\,(b+c\,x)^2\,(d+e\,x)^{5/2}}\,2\,(x\,(b+c\,x))^{3/2}\left(\sqrt{\frac{b}{c}}\,e\,x\,(b+c\,x)\right.$$

$$\left(3\,d^2\,(B\,d-A\,e)\,(c\,d-b\,e)^2-d\,(c\,d-b\,e)\,(B\,d\,(17\,c\,d-11\,b\,e)+6\,A\,e\,(-2\,c\,d+b\,e))\,(d+e\,x)+\right.$$
$$\left.(-3\,A\,e\,(11\,c^2\,d^2-11\,b\,c\,d\,e+b^2\,e^2)+B\,d\,(73\,c^2\,d^2-93\,b\,c\,d\,e+23\,b^2\,e^2))\,(d+e\,x)^2+5\,B\,c\,d\,(c\,d-b\,e)\,(d+e\,x)^3\right)+(d+e\,x)^2$$

$$\left(\sqrt{\frac{b}{c}}\,(B\,d\,(-128\,c^2\,d^2+168\,b\,c\,d\,e-43\,b^2\,e^2)+3\,A\,e\,(16\,c^2\,d^2-16\,b\,c\,d\,e+b^2\,e^2))\,(b+c\,x)\right.$$

$$(d+e\,x)+i\,b\,e\,(B\,d\,(-128\,c^2\,d^2+168\,b\,c\,d\,e-43\,b^2\,e^2)+3\,A\,e\,(16\,c^2\,d^2-16\,b\,c\,d\,e+b^2\,e^2))$$

$$\sqrt{1+\frac{b}{c\,x}}\,\sqrt{1+\frac{d}{e\,x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]+$$

$$i\,b\,e\,(c\,d-b\,e)\,(4\,B\,d\,(16\,c\,d-7\,b\,e)+3\,A\,e\,(-8\,c\,d+b\,e))\,\sqrt{1+\frac{b}{c\,x}}$$

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

Problem 1264: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 460 leaves, 10 steps):

$$\frac{1}{105\,c^3}2\left(28\,A\,c\,e\,(2\,c\,d-b\,e)+B\left(15\,c^2\,d^2-43\,b\,c\,d\,e+24\,b^2\,e^2\right)\right)\sqrt{d+e\,x}\,\sqrt{b\,x+c\,x^2}+$$
$$\frac{2\,(5\,B\,c\,d-6\,b\,B\,e+7\,A\,c\,e)\,(d+e\,x)^{3/2}\sqrt{b\,x+c\,x^2}}{35\,c^2}+\frac{2\,B\,(d+e\,x)^{5/2}\sqrt{b\,x+c\,x^2}}{7\,c}+$$
$$\left(2\sqrt{-b}\left(7\,A\,c\,e\left(23\,c^2\,d^2-23\,b\,c\,d\,e+8\,b^2\,e^2\right)+B\left(15\,c^3\,d^3-103\,b\,c^2\,d^2\,e+128\,b^2\,c\,d\,e^2-48\,b^3\,e^3\right)\right)\right.$$
$$\left.\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{d+e\,x}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/$$
$$\left(105\,c^{7/2}\,e\,\sqrt{1+\frac{e\,x}{d}}\,\sqrt{b\,x+c\,x^2}\right)-$$
$$\left(2\sqrt{-b}\,d\,(c\,d-b\,e)\left(28\,A\,c\,e\,(2\,c\,d-b\,e)+B\left(15\,c^2\,d^2-43\,b\,c\,d\,e+24\,b^2\,e^2\right)\right)\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\right.$$
$$\left.\sqrt{1+\frac{e\,x}{d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left(105\,c^{7/2}\,e\,\sqrt{d+e\,x}\,\sqrt{b\,x+c\,x^2}\right)$$

Result (type 4, 479 leaves):

$$\frac{1}{105\,c^3\sqrt{x\,(b+c\,x)}\,\sqrt{d+e\,x}}2\sqrt{x}$$
$$\left(\frac{1}{c\,e\,\sqrt{x}}\left(7\,A\,c\,e\left(23\,c^2\,d^2-23\,b\,c\,d\,e+8\,b^2\,e^2\right)+B\left(15\,c^3\,d^3-103\,b\,c^2\,d^2\,e+128\,b^2\,c\,d\,e^2-48\,b^3\,e^3\right)\right)\right.$$
$$(b+c\,x)\,(d+e\,x)+\sqrt{x}\,(b+c\,x)\,(d+e\,x)\,\left(7\,A\,c\,e\,(11\,c\,d-4\,b\,e+3\,c\,e\,x)+\right.$$
$$\left.B\left(24\,b^2\,e^2-b\,c\,e\,(61\,d+18\,e\,x)+15\,c^2\left(3\,d^2+3\,d\,e\,x+e^2\,x^2\right)\right)\right)+$$
$$i\sqrt{\frac{b}{c}}\left(7\,A\,c\,e\left(23\,c^2\,d^2-23\,b\,c\,d\,e+8\,b^2\,e^2\right)+B\left(15\,c^3\,d^3-103\,b\,c^2\,d^2\,e+128\,b^2\,c\,d\,e^2-48\,b^3\,e^3\right)\right)$$
$$\sqrt{1+\frac{b}{c\,x}}\,\sqrt{1+\frac{d}{e\,x}}\,x\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]+\frac{1}{b}$$
$$i\sqrt{\frac{b}{c}}\,(-c\,d+b\,e)\left(-105\,A\,c^3\,d^2+48\,b^3\,B\,e^2-8\,b^2\,c\,e\,(13\,B\,d+7\,A\,e)+b\,c^2\,d\,(60\,B\,d+133\,A\,e)\right)$$
$$\left.\sqrt{1+\frac{b}{c\,x}}\,\sqrt{1+\frac{d}{e\,x}}\,x\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]\right)$$

Problem 1265: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(A+B x)\,(d+e x)^{3/2}}{\sqrt{b x+c x^2}}\,dx$$

Optimal (type 4, 339 leaves, 9 steps):

$$\frac{2\,(3 B c d-4 b B e+5 A c e)\,\sqrt{d+e x}\,\sqrt{b x+c x^2}}{15 c^2}+\frac{2 B\,(d+e x)^{3/2}\,\sqrt{b x+c x^2}}{5 c}+\left(2\sqrt{-b}\,\left(10 A c e\,(2 c d-b e)+B\,\left(3 c^2 d^2-13 b c d e+8 b^2 e^2\right)\right)\sqrt{x}\,\sqrt{1+\frac{c x}{b}}\,\sqrt{d+e x}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(15 c^{5/2} e\,\sqrt{1+\frac{e x}{d}}\,\sqrt{b x+c x^2}\right)-\left(2\sqrt{-b}\,d\,(c d-b e)\,(3 B c d-4 b B e+5 A c e)\,\sqrt{x}\,\sqrt{1+\frac{c x}{b}}\,\sqrt{1+\frac{e x}{d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(15 c^{5/2} e\,\sqrt{d+e x}\,\sqrt{b x+c x^2}\right)$$

Result (type 4, 356 leaves):

$$\frac{1}{15 c^2\,\sqrt{x\,(b+c x)}\,\sqrt{d+e x}}\,2\sqrt{x}\left(\frac{1}{c e\sqrt{x}}\left(10 A c e\,(2 c d-b e)+B\,\left(3 c^2 d^2-13 b c d e+8 b^2 e^2\right)\right)(b+c x)\,(d+e x)+\sqrt{x}\,(b+c x)\,(d+e x)\,(5 A c e+B\,(6 c d-4 b e+3 c e x))+i\sqrt{\frac{b}{c}}\,\left(10 A c e\,(2 c d-b e)+B\,\left(3 c^2 d^2-13 b c d e+8 b^2 e^2\right)\right)\sqrt{1+\frac{b}{c x}}\,\sqrt{1+\frac{d}{e x}}\,x\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c d}{b e}\right]-\frac{1}{b}\,i\sqrt{\frac{b}{c}}\,(-c d+b e)\,\left(15 A c^2 d+8 b^2 B e-b c\,(9 B d+10 A e)\right)\sqrt{1+\frac{b}{c x}}\,\sqrt{1+\frac{d}{e x}}\,x\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c d}{b e}\right]\right)$$

Problem 1266: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 254 leaves, 8 steps):

$$\frac{2 B \sqrt{d + e x} \sqrt{b x + c x^2}}{3 c} + \left(2 \sqrt{-b} \left(B c d - 2 b B e + 3 A c e\right) \sqrt{x} \sqrt{1 + \frac{c x}{b}} \sqrt{d + e x} \text{ EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c} \sqrt{x}}{\sqrt{-b}}\right], \frac{b e}{c d}\right]\right) \Big/ \left(3 c^{3/2} e \sqrt{1 + \frac{e x}{d}} \sqrt{b x + c x^2}\right) - \left(2 \sqrt{-b} B d \left(c d - b e\right) \sqrt{x} \sqrt{1 + \frac{c x}{b}} \sqrt{1 + \frac{e x}{d}} \text{ EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c} \sqrt{x}}{\sqrt{-b}}\right], \frac{b e}{c d}\right]\right) \Big/ \left(3 c^{3/2} e \sqrt{d + e x} \sqrt{b x + c x^2}\right)$$

Result (type 4, 263 leaves):

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

Problem 1267: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{A + B x}{\sqrt{d + e x} \sqrt{b x + c x^2}} \, dx$$

Optimal (type 4, 204 leaves, 7 steps):

$$\frac{2\sqrt{-b}\;B\sqrt{x}\;\sqrt{1+\frac{c\,x}{b}}\;\sqrt{d+e\,x}\;\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\;\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]}{\sqrt{c}\;e\;\sqrt{1+\frac{e\,x}{d}}\;\sqrt{b\,x+c\,x^2}}-$$

$$\left(2\sqrt{-b}\;(B\,d-A\,e)\;\sqrt{x}\;\sqrt{1+\frac{c\,x}{b}}\;\sqrt{1+\frac{e\,x}{d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\;\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\bigg/\left(\sqrt{c}\;e\sqrt{d+e\,x}\;\sqrt{b\,x+c\,x^2}\right)$$

Result (type 4, 209 leaves):

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

Problem 1268: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{A+B\,x}{(d+e\,x)^{3/2}\sqrt{b\,x+c\,x^2}}\,dx$$

Optimal (type 4, 262 leaves, 8 steps):

$$\frac{2\,(B\,d-A\,e)\;\sqrt{b\,x+c\,x^2}}{d\,(c\,d-b\,e)\;\sqrt{d+e\,x}}-$$

$$\left(2\sqrt{-b}\;\sqrt{c}\;(B\,d-A\,e)\;\sqrt{x}\;\sqrt{1+\frac{c\,x}{b}}\;\sqrt{d+e\,x}\;\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\;\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\bigg/$$
$$\left(d\,e\,(c\,d-b\,e)\;\sqrt{1+\frac{e\,x}{d}}\;\sqrt{b\,x+c\,x^2}\right)+$$

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

Result (type 4, 226 leaves):

$$\left(-2\sqrt{\frac{b}{c}}\,d\,(B\,d-A\,e)\,(b+c\,x)+\right.$$

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

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

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

Problem 1269: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 369 leaves, 9 steps):

$$\frac{2\,(B\,d-A\,e)\,\sqrt{b\,x+c\,x^2}}{3\,d\,(c\,d-b\,e)\,(d+e\,x)^{3/2}}-\frac{2\,(2\,A\,e\,(2\,c\,d-b\,e)-B\,d\,(c\,d+b\,e))\,\sqrt{b\,x+c\,x^2}}{3\,d^2\,(c\,d-b\,e)^2\,\sqrt{d+e\,x}}+$$

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

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

$$\left(2\sqrt{-b}\,\sqrt{c}\,(B\,d-A\,e)\,\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{1+\frac{e\,x}{d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/$$

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

Result (type 4, 347 leaves):

$$\frac{1}{3\,b\,d^2\,e\,(c\,d-b\,e)^2\,\sqrt{x\,(b+c\,x)}\,(d+e\,x)^{3/2}}$$
$$2\left(b\,e\,x\,(b+c\,x)\,\left(B\,d\,\left(b\,e^2\,x+c\,d\,(2\,d+e\,x)\right)+A\,e\,\left(b\,e\,(3\,d+2\,e\,x)-c\,d\,(5\,d+4\,e\,x)\right)\right)-\right.$$
$$\sqrt{\frac{b}{c}}\,c\,(d+e\,x)\left(\sqrt{\frac{b}{c}}\,\left(2\,A\,e\,(-2\,c\,d+b\,e)+B\,d\,(c\,d+b\,e)\right)\,(b+c\,x)\,(d+e\,x)+\right.$$
$$i\,b\,e\,\left(2\,A\,e\,(-2\,c\,d+b\,e)+B\,d\,(c\,d+b\,e)\right)\,\sqrt{1+\frac{b}{c\,x}}\,\sqrt{1+\frac{d}{e\,x}}\,x^{3/2}$$
$$\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]-i\,e\,(c\,d-b\,e)\,\left(3\,A\,c\,d-b\,(B\,d+2\,A\,e)\right)$$
$$\left.\left.\sqrt{1+\frac{b}{c\,x}}\,\sqrt{1+\frac{d}{e\,x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]\right)\right)$$

Problem 1270: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{A+B\,x}{(d+e\,x)^{7/2}\,\sqrt{b\,x+c\,x^2}}\,dx$$

Optimal (type 4, 510 leaves, 10 steps):

$$\frac{2\left(B d-A e\right)\sqrt{b x+c x^2}}{5 d\left(c d-b e\right)\left(d+e x\right)^{5/2}}-\frac{2\left(4 A e\left(2 c d-b e\right)-B d\left(3 c d+b e\right)\right)\sqrt{b x+c x^2}}{15 d^2\left(c d-b e\right)^2\left(d+e x\right)^{3/2}}+$$
$$\left(2\left(B d\left(3 c^2 d^2+7 b c d e-2 b^2 e^2\right)-A e\left(23 c^2 d^2-23 b c d e+8 b^2 e^2\right)\right)\sqrt{b x+c x^2}\right)\Big/$$
$$\left(15 d^3\left(c d-b e\right)^3\sqrt{d+e x}\right)-$$
$$\left(2\sqrt{-b}\sqrt{c}\left(B d\left(3 c^2 d^2+7 b c d e-2 b^2 e^2\right)-A e\left(23 c^2 d^2-23 b c d e+8 b^2 e^2\right)\right)\sqrt{x}\sqrt{1+\frac{c x}{b}}\right.$$
$$\left.\sqrt{d+e x}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(15 d^3 e\left(c d-b e\right)^3\sqrt{1+\frac{e x}{d}}\sqrt{b x+c x^2}\right)-$$
$$\left(2\sqrt{-b}\sqrt{c}\left(4 A e\left(2 c d-b e\right)-B d\left(3 c d+b e\right)\right)\sqrt{x}\sqrt{1+\frac{c x}{b}}\sqrt{1+\frac{e x}{d}}\right.$$
$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(15 d^2 e\left(c d-b e\right)^2\sqrt{d+e x}\sqrt{b x+c x^2}\right)$$

Result (type 4, 506 leaves):

$$\frac{1}{15 b d^3 e\left(c d-b e\right)^3\sqrt{x\left(b+c x\right)}\left(d+e x\right)^{5/2}}$$
$$2\left(b e x\left(b+c x\right)\left(3 d^2\left(B d-A e\right)\left(c d-b e\right)^2+d\left(c d-b e\right)\left(4 A e\left(-2 c d+b e\right)+B d\left(3 c d+b e\right)\right)\right.\right.$$
$$\left.\left(d+e x\right)+\left(A e\left(-23 c^2 d^2+23 b c d e-8 b^2 e^2\right)+B d\left(3 c^2 d^2+7 b c d e-2 b^2 e^2\right)\right)\left(d+e x\right)^2\right)-$$
$$\sqrt{\frac{b}{c}}\,c\left(d+e x\right)^2\left(\sqrt{\frac{b}{c}}\left(A e\left(-23 c^2 d^2+23 b c d e-8 b^2 e^2\right)+B d\left(3 c^2 d^2+7 b c d e-2 b^2 e^2\right)\right)\left(b+\right.\right.$$
$$\left.c x\right)\left(d+e x\right)-\mathrm{i}\, b e\left(B d\left(-3 c^2 d^2-7 b c d e+2 b^2 e^2\right)+A e\left(23 c^2 d^2-23 b c d e+8 b^2 e^2\right)\right)$$
$$\sqrt{1+\frac{b}{c x}}\sqrt{1+\frac{d}{e x}}\,x^{3/2}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c d}{b e}\right]-$$
$$\mathrm{i}\, e\left(c d-b e\right)\left(15 A c^2 d^2+2 b^2 e\left(B d+4 A e\right)-b c d\left(6 B d+19 A e\right)\right)$$
$$\left.\left.\sqrt{1+\frac{b}{c x}}\sqrt{1+\frac{d}{e x}}\,x^{3/2}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c d}{b e}\right]\right)\right)$$

Problem 1271: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 527 leaves, 10 steps):

$$-\frac{2 (d+e x)^{5/2} \left(A b c d+\left(2 A c^2 d+b^2 B e-b c (B d+A e)\right) x\right)}{b^2 c \sqrt{b x+c x^2}}+\frac{1}{15 b^2 c^3}$$
$$2 e \left(30 A c^3 d^2-24 b^3 B e^2-15 b c^2 d (B d+2 A e)+b^2 c e (43 B d+20 A e)\right) \sqrt{d+e x} \sqrt{b x+c x^2}+$$
$$\frac{2 e \left(10 A c^2 d+6 b^2 B e-5 b c (B d+A e)\right) (d+e x)^{3/2} \sqrt{b x+c x^2}}{5 b^2 c^2}+$$
$$\left(2 \left(30 A c^4 d^3+48 b^4 B e^3-15 b c^3 d^2 (B d+3 A e)-\right.\right.$$
$$\left.8 b^3 c e^2 (16 B d+5 A e)+b^2 c^2 d e (103 B d+95 A e)\right) \sqrt{x} \sqrt{1+\frac{c x}{b}} \sqrt{d+e x}$$
$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c} \sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right) \Big/ \left(15 (-b)^{3/2} c^{7/2} \sqrt{1+\frac{e x}{d}} \sqrt{b x+c x^2}\right)-$$
$$\left(2 d (c d-b e) \left(30 A c^3 d^2-24 b^3 B e^2-15 b c^2 d (B d+2 A e)+b^2 c e (43 B d+20 A e)\right) \sqrt{x} \sqrt{1+\frac{c x}{b}}\right.$$
$$\left.\sqrt{1+\frac{e x}{d}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c} \sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right) \Big/ \left(15 (-b)^{3/2} c^{7/2} \sqrt{d+e x} \sqrt{b x+c x^2}\right)$$

Result (type 4, 493 leaves):

$$\frac{1}{15\,b^3\,c^3\,\sqrt{x\,(b+c\,x)}\,\sqrt{d+e\,x}}$$

$$2\left(b\,(d+e\,x)\,\left(15\,(b\,B-A\,c)\,(c\,d-b\,e)^3\,x-15\,A\,c^3\,d^3\,(b+c\,x)+b^2\,e^2\,(16\,B\,c\,d-9\,b\,B\,e+5\,A\,c\,e)\right.\right.$$
$$\left.x\,(b+c\,x)+3\,b^2\,B\,c\,e^3\,x^2\,(b+c\,x)\right)+$$
$$\sqrt{\frac{b}{c}}\left(\sqrt{\frac{b}{c}}\,\left(30\,A\,c^4\,d^3+48\,b^4\,B\,e^3-15\,b\,c^3\,d^2\,(B\,d+3\,A\,e)-8\,b^3\,c\,e^2\,(16\,B\,d+5\,A\,e)+\right.\right.$$
$$\left.b^2\,c^2\,d\,e\,(103\,B\,d+95\,A\,e)\right)\,(b+c\,x)\,(d+e\,x)+$$
$$i\,b\,e\,\left(30\,A\,c^4\,d^3+48\,b^4\,B\,e^3-15\,b\,c^3\,d^2\,(B\,d+3\,A\,e)-8\,b^3\,c\,e^2\,(16\,B\,d+5\,A\,e)+\right.$$
$$\left.b^2\,c^2\,d\,e\,(103\,B\,d+95\,A\,e)\right)\,\sqrt{1+\frac{b}{c\,x}}\,\sqrt{1+\frac{d}{e\,x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]-$$
$$i\,b\,e\,(c\,d-b\,e)\,\left(15\,A\,c^3\,d^2-48\,b^3\,B\,e^2-15\,b\,c^2\,d\,(4\,B\,d+5\,A\,e)+8\,b^2\,c\,e\,(13\,B\,d+5\,A\,e)\right)$$
$$\left.\left.\sqrt{1+\frac{b}{c\,x}}\,\sqrt{1+\frac{d}{e\,x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]\right)\right)$$

Problem 1272: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 399 leaves, 9 steps):

$$-\frac{2\,(d+e\,x)^{3/2}\,\left(A\,b\,c\,d+\left(2\,A\,c^2\,d+b^2\,B\,e-b\,c\,(B\,d+A\,e)\right)\,x\right)}{b^2\,c\,\sqrt{b\,x+c\,x^2}}+$$
$$\frac{2\,e\,\left(6\,A\,c^2\,d+4\,b^2\,B\,e-3\,b\,c\,(B\,d+A\,e)\right)\,\sqrt{d+e\,x}\,\sqrt{b\,x+c\,x^2}}{3\,b^2\,c^2}+$$
$$\left(2\,\left(6\,A\,c^3\,d^2-8\,b^3\,B\,e^2-3\,b\,c^2\,d\,(B\,d+2\,A\,e)+b^2\,c\,e\,(13\,B\,d+6\,A\,e)\right)\,\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{d+e\,x}\right.$$
$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left(3\,(-b)^{3/2}\,c^{5/2}\,\sqrt{1+\frac{e\,x}{d}}\,\sqrt{b\,x+c\,x^2}\right)-$$
$$\left(2\,d\,(c\,d-b\,e)\,\left(6\,A\,c^2\,d+4\,b^2\,B\,e-3\,b\,c\,(B\,d+A\,e)\right)\,\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{1+\frac{e\,x}{d}}\right.$$
$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left(3\,(-b)^{3/2}\,c^{5/2}\,\sqrt{d+e\,x}\,\sqrt{b\,x+c\,x^2}\right)$$

Result (type 4, 391 leaves) :

$$\frac{1}{3\,b^3\,c^2\,\sqrt{x\,(b+c\,x)}\,\sqrt{d+e\,x}}$$
$$2\left(b\,(d+e\,x)\,\left(3\,(b\,B-A\,c)\,(c\,d-b\,e)^2\,x-3\,A\,c^2\,d^2\,(b+c\,x)+b^2\,B\,e^2\,x\,(b+c\,x)\right)+\right.$$
$$\sqrt{\frac{b}{c}}\left(\sqrt{\frac{b}{c}}\,\left(6\,A\,c^3\,d^2-8\,b^3\,B\,e^2-3\,b\,c^2\,d\,(B\,d+2\,A\,e)+b^2\,c\,e\,(13\,B\,d+6\,A\,e)\right)\,(b+c\,x)\,(d+e\,x)+\right.$$
$$i\,b\,e\,\left(6\,A\,c^3\,d^2-8\,b^3\,B\,e^2-3\,b\,c^2\,d\,(B\,d+2\,A\,e)+b^2\,c\,e\,(13\,B\,d+6\,A\,e)\right)\,\sqrt{1+\frac{b}{c\,x}}$$
$$\sqrt{1+\frac{d}{e\,x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]-i\,b\,e\,(c\,d-b\,e)\,\left(3\,A\,c^2\,d+8\,b^2\,B\,e-\right.$$
$$\left.\left.\left.3\,b\,c\,(3\,B\,d+2\,A\,e)\right)\,\sqrt{1+\frac{b}{c\,x}}\,\sqrt{1+\frac{d}{e\,x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]\right)\right)$$

Problem 1273: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 295 leaves, 8 steps):

$$-\frac{2\sqrt{d+e\,x}\,\left(A\,b\,c\,d+\left(2\,A\,c^2\,d+b^2\,B\,e-b\,c\,(B\,d+A\,e)\right)x\right)}{b^2\,c\,\sqrt{b\,x+c\,x^2}}+\left(2\left(2\,A\,c^2\,d+2\,b^2\,B\,e-b\,c\,(B\,d+A\,e)\right)\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{d+e\,x}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left((-b)^{3/2}\,c^{3/2}\,\sqrt{1+\frac{e\,x}{d}}\,\sqrt{b\,x+c\,x^2}\right)+\left(2\,(b\,B-2\,A\,c)\,d\,(c\,d-b\,e)\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{1+\frac{e\,x}{d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left((-b)^{3/2}\,c^{3/2}\,\sqrt{d+e\,x}\,\sqrt{b\,x+c\,x^2}\right)$$

Result (type 4, 302 leaves):

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

Problem 1274: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 253 leaves, 8 steps):

$$-\frac{2\left(A b-(b B-2 A c) x\right)\sqrt{d+e x}}{b^2\sqrt{b x+c x^2}}-\frac{2 (b B-2 A c)\sqrt{x}\sqrt{1+\frac{c x}{b}}\sqrt{d+e x}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]}{(-b)^{3/2}\sqrt{c}\sqrt{1+\frac{e x}{d}}\sqrt{b x+c x^2}}+$$
$$\left(2 (b B d-2 A c d+A b e)\sqrt{x}\sqrt{1+\frac{c x}{b}}\sqrt{1+\frac{e x}{d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left((-b)^{3/2}\sqrt{c}\sqrt{d+e x}\sqrt{b x+c x^2}\right)$$

Result (type 4, 210 leaves):

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

Problem 1275: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 295 leaves, 8 steps):

$$-\frac{2\sqrt{d+e\,x}\,\left(A\,b\,(c\,d-b\,e)+c\,(2\,A\,c\,d-b\,(B\,d+A\,e))\,x\right)}{b^2\,d\,(c\,d-b\,e)\,\sqrt{b\,x+c\,x^2}}-\left(2\sqrt{c}\,(b\,B\,d-2\,A\,c\,d+A\,b\,e)\,\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{d+e\,x}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left((-b)^{3/2}\,d\,(c\,d-b\,e)\,\sqrt{1+\frac{e\,x}{d}}\,\sqrt{b\,x+c\,x^2}\right)+\frac{2\,(b\,B-2\,A\,c)\,\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{1+\frac{e\,x}{d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]}{(-b)^{3/2}\,\sqrt{c}\,\sqrt{d+e\,x}\,\sqrt{b\,x+c\,x^2}}$$

Result (type 4, 233 leaves):

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

Problem 1276: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 415 leaves, 9 steps):

$$-\frac{2\left(A b (c d-b e)+c (2 A c d-b (B d+A e)) x\right)}{b^2 d (c d-b e) \sqrt{d+e x} \sqrt{b x+c x^2}}-\frac{2 e \left(2 A c^2 d^2-b^2 e (B d-2 A e)-b c d (B d+2 A e)\right) \sqrt{b x+c x^2}}{b^2 d^2 (c d-b e)^2 \sqrt{d+e x}}+$$
$$\left(2 \sqrt{c} \left(2 A c^2 d^2-b^2 e (B d-2 A e)-b c d (B d+2 A e)\right) \sqrt{x} \sqrt{1+\frac{c x}{b}} \sqrt{d+e x}\right.$$
$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c} \sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left((-b)^{3/2} d^2 (c d-b e)^2 \sqrt{1+\frac{e x}{d}} \sqrt{b x+c x^2}\right)+$$
$$\left(2 \sqrt{c} (b B d-2 A c d+A b e) \sqrt{x} \sqrt{1+\frac{c x}{b}} \sqrt{1+\frac{e x}{d}} \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c} \sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/$$
$$\left((-b)^{3/2} d (c d-b e) \sqrt{d+e x} \sqrt{b x+c x^2}\right)$$

Result (type 4, 367 leaves):

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

Problem 1277: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 570 leaves, 10 steps):

$$-\frac{2\left(A b\left(c d-b e\right)+c\left(2 A c d-b\left(B d+A e\right)\right)x\right)}{b^2 d\left(c d-b e\right)\left(d+e x\right)^{3/2}\sqrt{b x+c x^2}}-\frac{2 e\left(6 A c^2 d^2-b^2 e\left(B d-4 A e\right)-3 b c d\left(B d+2 A e\right)\right)\sqrt{b x+c x^2}}{3 b^2 d^2\left(c d-b e\right)^2\left(d+e x\right)^{3/2}}-$$

$$\left(2 e\left(6 A c^3 d^3-b^2 c d e\left(7 B d-19 A e\right)+2 b^3 e^2\left(B d-4 A e\right)-3 b c^2 d^2\left(B d+3 A e\right)\right)\sqrt{b x+c x^2}\right)\Big/\left(3 b^2 d^3\left(c d-b e\right)^3\sqrt{d+e x}\right)+$$

$$\left(2\sqrt{c}\left(6 A c^3 d^3-b^2 c d e\left(7 B d-19 A e\right)+2 b^3 e^2\left(B d-4 A e\right)-3 b c^2 d^2\left(B d+3 A e\right)\right)\sqrt{x}\sqrt{1+\frac{c x}{b}}\sqrt{d+e x}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(3\left(-b\right)^{3/2} d^3\left(c d-b e\right)^3\sqrt{1+\frac{e x}{d}}\sqrt{b x+c x^2}\right)-$$

$$\left(2\sqrt{c}\left(6 A c^2 d^2-b^2 e\left(B d-4 A e\right)-3 b c d\left(B d+2 A e\right)\right)\sqrt{x}\sqrt{1+\frac{c x}{b}}\sqrt{1+\frac{e x}{d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(3\left(-b\right)^{3/2} d^2\left(c d-b e\right)^2\sqrt{d+e x}\sqrt{b x+c x^2}\right)$$

Result (type 4, 506 leaves) :

$$\frac{1}{3\, b^3\, d^3\, (c\, d-b\, e)^3\, \sqrt{x\, (b+c\, x)}\, (d+e\, x)^{3/2}}$$
$$2 \left(b \left(b^2\, d\, e^2\, (B\, d-A\, e)\, (c\, d-b\, e)\, x\, (b+c\, x)+b^2\, e^2\, (B\, d\, (7\, c\, d-2\, b\, e)+5\, A\, e\, (-2\, c\, d+b\, e))\, x\right.\right.$$
$$\left.(b+c\, x)\, (d+e\, x)+3\, c^3\, (b\, B-A\, c)\, d^3\, x\, (d+e\, x)^2-3\, A\, (c\, d-b\, e)^3\, (b+c\, x)\, (d+e\, x)^2\right)+$$
$$\sqrt{\frac{b}{c}}\, c\, (d+e\, x) \left(\sqrt{\frac{b}{c}}\, \left(6\, A\, c^3\, d^3+2\, b^3\, e^2\, (B\, d-4\, A\, e)-3\, b\, c^2\, d^2\, (B\, d+3\, A\, e)+\right.\right.$$
$$\left.b^2\, c\, d\, e\, (-7\, B\, d+19\, A\, e)\right)\, (b+c\, x)\, (d+e\, x)+$$
$$i\, b\, e\, \left(6\, A\, c^3\, d^3+2\, b^3\, e^2\, (B\, d-4\, A\, e)-3\, b\, c^2\, d^2\, (B\, d+3\, A\, e)+b^2\, c\, d\, e\, (-7\, B\, d+19\, A\, e)\right)$$
$$\sqrt{1+\frac{b}{c\, x}}\, \sqrt{1+\frac{d}{e\, x}}\, x^{3/2}\, \text{EllipticE}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\, d}{b\, e}\right]-$$
$$i\, b\, e\, (c\, d-b\, e)\, \left(3\, A\, c^2\, d^2+3\, b\, c\, d\, (2\, B\, d-5\, A\, e)+2\, b^2\, e\, (-B\, d+4\, A\, e)\right)$$
$$\left.\left.\sqrt{1+\frac{b}{c\, x}}\, \sqrt{1+\frac{d}{e\, x}}\, x^{3/2}\, \text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\, d}{b\, e}\right]\right)\right)$$

Problem 1278: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(A+B\, x)\, (d+e\, x)^{7/2}}{\left(b\, x+c\, x^2\right)^{5/2}}\, dx$$

Optimal (type 4, 524 leaves, 9 steps):

$$-\frac{2\,(d+e\,x)^{5/2}\,\left(A\,b\,c\,d+\left(2\,A\,c^2\,d+b^2\,B\,e-b\,c\,(B\,d+A\,e)\right)\,x\right)}{3\,b^2\,c\,\left(b\,x+c\,x^2\right)^{3/2}}+$$

$$\left(2\,\sqrt{d+e\,x}\,\left(b\,c\,d^2\,\left(8\,A\,c^2\,d+b^2\,B\,e-b\,c\,(4\,B\,d+9\,A\,e)\right)+\left(16\,A\,c^4\,d^3-4\,b^4\,B\,e^3+b^3\,c\,e^2\,(4\,B\,d+A\,e)-8\,b\,c^3\,d^2\,(B\,d+3\,A\,e)+b^2\,c^2\,d\,e\,(5\,B\,d+6\,A\,e)\right)\,x\right)\right)\Big/$$

$$\left(3\,b^4\,c^2\,\sqrt{b\,x+c\,x^2}\right)-\left(2\,\left(16\,A\,c^4\,d^3-8\,b^4\,B\,e^3+b^3\,c\,e^2\,(5\,B\,d+2\,A\,e)-8\,b\,c^3\,d^2\,(B\,d+3\,A\,e)+b^2\,c^2\,d\,e\,(5\,B\,d+4\,A\,e)\right)\,\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{d+e\,x}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left(3\,(-b)^{7/2}\,c^{5/2}\,\sqrt{1+\frac{e\,x}{d}}\,\sqrt{b\,x+c\,x^2}\right)+$$

$$\left(2\,d\,(c\,d-b\,e)\,\left(16\,A\,c^3\,d^2+4\,b^3\,B\,e^2+b^2\,c\,e\,(B\,d-A\,e)-8\,b\,c^2\,d\,(B\,d+2\,A\,e)\right)\,\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\right.$$

$$\left.\sqrt{1+\frac{e\,x}{d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left(3\,(-b)^{7/2}\,c^{5/2}\,\sqrt{d+e\,x}\,\sqrt{b\,x+c\,x^2}\right)$$

Result (type 4, 530 leaves) :

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

$$2\left(b\,\left(d+e\,x\right)\,\left(b\,\left(b\,B-A\,c\right)\,\left(c\,d-b\,e\right)^3\,x^2+\left(c\,d-b\,e\right)^2\,\left(-8\,A\,c^2\,d+5\,b^2\,B\,e+b\,c\,\left(5\,B\,d-2\,A\,e\right)\right)\right.\right.$$

$$\left.x^2\,\left(b+c\,x\right)+A\,b\,c^2\,d^3\,\left(b+c\,x\right)^2+c^2\,d^2\,\left(3\,b\,B\,d-8\,A\,c\,d+10\,A\,b\,e\right)\,x\,\left(b+c\,x\right)^2\right)+$$

$$\sqrt{\frac{b}{c}}\,x\,\left(b+c\,x\right)\,\left(\sqrt{\frac{b}{c}}\,\left(16\,A\,c^4\,d^3-8\,b^4\,B\,e^3+b^3\,c\,e^2\,\left(5\,B\,d+2\,A\,e\right)-\right.\right.$$

$$\left.8\,b\,c^3\,d^2\,\left(B\,d+3\,A\,e\right)+b^2\,c^2\,d\,e\,\left(5\,B\,d+4\,A\,e\right)\right)\,\left(b+c\,x\right)\,\left(d+e\,x\right)+\mathrm{i}\,b\,e$$

$$\left(16\,A\,c^4\,d^3-8\,b^4\,B\,e^3+b^3\,c\,e^2\,\left(5\,B\,d+2\,A\,e\right)-8\,b\,c^3\,d^2\,\left(B\,d+3\,A\,e\right)+b^2\,c^2\,d\,e\,\left(5\,B\,d+4\,A\,e\right)\right)$$

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

$$\mathrm{i}\,b\,e\,\left(c\,d-b\,e\right)\,\left(8\,A\,c^3\,d^2+8\,b^3\,B\,e^2-b^2\,c\,e\,\left(B\,d+2\,A\,e\right)-b\,c^2\,d\,\left(4\,B\,d+5\,A\,e\right)\right)$$

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

Problem 1279: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(A+B\,x\right)\,\left(d+e\,x\right)^{5/2}}{\left(b\,x+c\,x^2\right)^{5/2}}\,dx$$

Optimal (type 4, 454 leaves, 9 steps):

$$-\frac{2\,(d+e\,x)^{3/2}\,\left(A\,b\,c\,d+\left(2\,A\,c^2\,d+b^2\,B\,e-b\,c\,(B\,d+A\,e)\right)\,x\right)}{3\,b^2\,c\,\left(b\,x+c\,x^2\right)^{3/2}}+$$

$$\frac{1}{3\,b^4\,c\,\sqrt{b\,x+c\,x^2}}2\,\sqrt{d+e\,x}\,\left(b\,d\,\left(8\,A\,c^2\,d+b^2\,B\,e-b\,c\,(4\,B\,d+7\,A\,e)\right)+\left(16\,A\,c^3\,d^2+2\,b^3\,B\,e^2+b^2\,c\,e\,(3\,B\,d+A\,e)-8\,b\,c^2\,d\,(B\,d+2\,A\,e)\right)\,x\right)-$$

$$\left(2\,\left(16\,A\,c^3\,d^2+2\,b^3\,B\,e^2+b^2\,c\,e\,(3\,B\,d+A\,e)-8\,b\,c^2\,d\,(B\,d+2\,A\,e)\right)\,\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{d+e\,x}\;\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left(3\,(-b)^{7/2}\,c^{3/2}\,\sqrt{1+\frac{e\,x}{d}}\,\sqrt{b\,x+c\,x^2}\right)+$$

$$\left(2\,d\,(c\,d-b\,e)\,\left(16\,A\,c^2\,d-b^2\,B\,e-8\,b\,c\,(B\,d+A\,e)\right)\,\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{1+\frac{e\,x}{d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left(3\,(-b)^{7/2}\,c^{3/2}\,\sqrt{d+e\,x}\,\sqrt{b\,x+c\,x^2}\right)$$

Result (type 4, 452 leaves) :

$$-\frac{1}{3\,b^5\,c\,\left(x\,(b+c\,x)\right)^{3/2}\,\sqrt{d+e\,x}}2\left(b\,(d+e\,x)\,\left(b\,(b\,B-A\,c)\,(c\,d-b\,e)^2\,x^2+(c\,d-b\,e)\,\left(-8\,A\,c^2\,d+2\,b^2\,B\,e+b\,c\,(5\,B\,d+A\,e)\right)\,x^2\right.\right.$$
$$\left.(b+c\,x)+A\,b\,c\,d^2\,(b+c\,x)^2+c\,d\,(3\,b\,B\,d-8\,A\,c\,d+7\,A\,b\,e)\,x\,(b+c\,x)^2\right)+\sqrt{\frac{b}{c}}\,x\,(b+c\,x)$$
$$\left(\sqrt{\frac{b}{c}}\,\left(16\,A\,c^3\,d^2+2\,b^3\,B\,e^2+b^2\,c\,e\,(3\,B\,d+A\,e)-8\,b\,c^2\,d\,(B\,d+2\,A\,e)\right)\,(b+c\,x)\,(d+e\,x)+\mathrm{i}\,b\right.$$
$$e\,\left(16\,A\,c^3\,d^2+2\,b^3\,B\,e^2+b^2\,c\,e\,(3\,B\,d+A\,e)-8\,b\,c^2\,d\,(B\,d+2\,A\,e)\right)\,\sqrt{1+\frac{b}{c\,x}}\,\sqrt{1+\frac{d}{e\,x}}\,x^{3/2}$$
$$\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]-\mathrm{i}\,b\,e\,(c\,d-b\,e)\,\left(8\,A\,c^2\,d-2\,b^2\,B\,e-b\,c\,(4\,B\,d+A\,e)\right)$$
$$\left.\left.\sqrt{1+\frac{b}{c\,x}}\,\sqrt{1+\frac{d}{e\,x}}\,x^{3/2}\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]\right)\right)$$

Problem 1280: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 410 leaves, 9 steps):

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

$$2\sqrt{d+e\,x}\,\left(b\,\left(8\,A\,c^2\,d+b^2\,B\,e-b\,c\,\left(4\,B\,d+5\,A\,e\right)\right)+c\,\left(16\,A\,c^2\,d+b^2\,B\,e-8\,b\,c\,\left(B\,d+A\,e\right)\right)\,x\right)-$$

$$\left(2\,\left(16\,A\,c^2\,d+b^2\,B\,e-8\,b\,c\,\left(B\,d+A\,e\right)\right)\,\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{d+e\,x}\right.$$

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

$$\left(2\,\left(16\,A\,c^2\,d^2-8\,b\,c\,d\,\left(B\,d+2\,A\,e\right)+b^2\,e\,\left(5\,B\,d+3\,A\,e\right)\right)\,\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{1+\frac{e\,x}{d}}\right.$$

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

Result (type 4, 378 leaves):

$$-\frac{1}{3\,b^5\,\left(x\,\left(b+c\,x\right)\right)^{3/2}\,\sqrt{d+e\,x}}\,2\,\left(b\,\left(d+e\,x\right)\,\left(b\,B\,x\,\left(8\,c^2\,d\,x^2+b^2\,\left(3\,d-2\,e\,x\right)+b\,c\,x\,\left(12\,d-e\,x\right)\right)+\right.\right.$$

$$\left.A\,\left(-16\,c^3\,d\,x^3+8\,b\,c^2\,x^2\,\left(-3\,d+e\,x\right)+b^3\,\left(d+4\,e\,x\right)+b^2\,c\,x\,\left(-6\,d+13\,e\,x\right)\right)\right)+$$

$$\sqrt{\frac{b}{c}}\,x\,\left(b+c\,x\right)\,\left(\sqrt{\frac{b}{c}}\,\left(16\,A\,c^2\,d+b^2\,B\,e-8\,b\,c\,\left(B\,d+A\,e\right)\right)\,\left(b+c\,x\right)\,\left(d+e\,x\right)+\right.$$

$$i\,b\,e\,\left(16\,A\,c^2\,d+b^2\,B\,e-8\,b\,c\,\left(B\,d+A\,e\right)\right)\,\sqrt{1+\frac{b}{c\,x}}\,\sqrt{1+\frac{d}{e\,x}}\,x^{3/2}$$

$$\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]-i\,b\,e\,\left(8\,A\,c^2\,d+b^2\,B\,e-b\,c\,\left(4\,B\,d+5\,A\,e\right)\right)$$

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

Problem 1281: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 420 leaves, 9 steps):

$$-\frac{2\left(A b-\left(b B-2 A c\right) x\right)\sqrt{d+e x}}{3 b^2\left(b x+c x^2\right)^{3/2}}-\left(2\sqrt{d+e x}\right.$$
$$\left.\left(b\left(c d-b e\right)\left(4 b B d-8 A c d+A b e\right)-c\left(16 A c^2 d^2+b^2 e\left(7 B d+A e\right)-8 b c d\left(B d+2 A e\right)\right) x\right)\right)\Big/$$
$$\left(3 b^4 d\left(c d-b e\right)\sqrt{b x+c x^2}\right)-\left(2\sqrt{c}\left(16 A c^2 d^2+b^2 e\left(7 B d+A e\right)-8 b c d\left(B d+2 A e\right)\right)\right.$$
$$\left.\sqrt{x}\sqrt{1+\frac{c x}{b}}\sqrt{d+e x}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/$$
$$\left(3\left(-b\right)^{7/2} d\left(c d-b e\right)\sqrt{1+\frac{e x}{d}}\sqrt{b x+c x^2}\right)+$$
$$\left(2\left(16 A c^2 d+3 b^2 B e-8 b c\left(B d+A e\right)\right)\sqrt{x}\sqrt{1+\frac{c x}{b}}\sqrt{1+\frac{e x}{d}}\right.$$
$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/\left(3\left(-b\right)^{7/2}\sqrt{c}\sqrt{d+e x}\sqrt{b x+c x^2}\right)$$

Result (type 4, 441 leaves) :

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

$$2 \left(\sqrt{\frac{b}{c}}\, (d+e x)\, \left(b c\, (b B-A c)\, d\, (c d-b e)\, x^2+c d\, \left(-8 A c^2 d-4 b^2 B e+b c\, (5 B d+7 A e)\right) x^2\right.\right.$$

$$\left.(b+c x)+A b d\, (c d-b e)\, (b+c x)^2+(c d-b e)\, (3 b B d-8 A c d+A b e)\, x\, (b+c x)^2\right)+$$

$$x\, (b+c x) \left(\sqrt{\frac{b}{c}}\, \left(16 A c^2 d^2+b^2 e\, (7 B d+A e)-8 b c d\, (B d+2 A e)\right) (b+c x)\, (d+e x)+\right.$$

$$i\, b e\, \left(16 A c^2 d^2+b^2 e\, (7 B d+A e)-8 b c d\, (B d+2 A e)\right) \sqrt{1+\frac{b}{c x}}\, \sqrt{1+\frac{d}{e x}}\, x^{3/2}$$

$$\text{EllipticE}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right], \frac{c d}{b e}\right]-i\, b e\, (c d-b e)\, \left(8 A c d-b\, (4 B d+A e)\right)$$

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

Problem 1282: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 543 leaves, 9 steps):

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

$$\left(2\sqrt{d+e\,x}\,\left(b\,\left(c\,d-b\,e\right)\,\left(8\,A\,c^2\,d^2+b^2\,e\,\left(3\,B\,d-2\,A\,e\right)-b\,c\,d\,\left(4\,B\,d+5\,A\,e\right)\right)+c\,\left(16\,A\,c^3\,d^3-b^3\,e^2\,\left(3\,B\,d-2\,A\,e\right)-8\,b\,c^2\,d^2\,\left(B\,d+3\,A\,e\right)+b^2\,c\,d\,e\,\left(13\,B\,d+4\,A\,e\right)\right)\,x\right)\right)\Big/\left(3\,b^4\,d^2\,\left(c\,d-b\,e\right)^2\sqrt{b\,x+c\,x^2}\right)-$$

$$\left(2\sqrt{c}\,\left(16\,A\,c^3\,d^3-b^3\,e^2\,\left(3\,B\,d-2\,A\,e\right)-8\,b\,c^2\,d^2\,\left(B\,d+3\,A\,e\right)+b^2\,c\,d\,e\,\left(13\,B\,d+4\,A\,e\right)\right)\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{d+e\,x}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left(3\,\left(-b\right)^{7/2}\,d^2\,\left(c\,d-b\,e\right)^2\sqrt{1+\frac{e\,x}{d}}\,\sqrt{b\,x+c\,x^2}\right)+$$

$$\left(2\sqrt{c}\,\left(16\,A\,c^2\,d^2+b^2\,e\,\left(9\,B\,d-A\,e\right)-8\,b\,c\,d\,\left(B\,d+2\,A\,e\right)\right)\sqrt{x}\,\sqrt{1+\frac{c\,x}{b}}\,\sqrt{1+\frac{e\,x}{d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b\,e}{c\,d}\right]\right)\Big/\left(3\,\left(-b\right)^{7/2}\,d\,\left(c\,d-b\,e\right)\sqrt{d+e\,x}\,\sqrt{b\,x+c\,x^2}\right)$$

Result (type 4, 514 leaves) :

$$-\frac{1}{3\,b^5\,d^2\,(c\,d-b\,e)^2\,(x\,(b+c\,x))^{3/2}\,\sqrt{d+e\,x}}\left(2\left(b\,(d+e\,x)\,\left(b\,c^2\,(b\,B-A\,c)\,d^2\,(c\,d-b\,e)\,x^2+c^2\,d^2\,\left(-8\,A\,c^2\,d-7\,b^2\,B\,e+5\,b\,c\,(B\,d+2\,A\,e)\right)\,x^2\right.\right.\right.$$

$$\left.(b+c\,x)+A\,b\,d\,(c\,d-b\,e)^2\,(b+c\,x)^2+(c\,d-b\,e)^2\,(3\,b\,B\,d-8\,A\,c\,d-2\,A\,b\,e)\,x\,(b+c\,x)^2\right)+$$

$$\sqrt{\frac{b}{c}}\,c\,x\,(b+c\,x)\left(\sqrt{\frac{b}{c}}\,\left(16\,A\,c^3\,d^3+b^3\,e^2\,(-3\,B\,d+2\,A\,e)-8\,b\,c^2\,d^2\,(B\,d+3\,A\,e)+\right.\right.$$

$$\left.b^2\,c\,d\,e\,(13\,B\,d+4\,A\,e)\right)\,(b+c\,x)\,(d+e\,x)+$$

$$i\,b\,e\,\left(16\,A\,c^3\,d^3+b^3\,e^2\,(-3\,B\,d+2\,A\,e)-8\,b\,c^2\,d^2\,(B\,d+3\,A\,e)+b^2\,c\,d\,e\,(13\,B\,d+4\,A\,e)\right)$$

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

$$i\,b\,e\,(c\,d-b\,e)\,\left(8\,A\,c^2\,d^2+b^2\,e\,(3\,B\,d-2\,A\,e)-b\,c\,d\,(4\,B\,d+5\,A\,e)\right)$$

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

Problem 1283: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 706 leaves, 10 steps):

$$-\frac{2\left(A b\,(c d-b e)+c\,(2 A c d-b\,(B d+A e))\,x\right)}{3 b^2 d\,(c d-b e)\,\sqrt{d+e x}\,\left(b x+c x^2\right)^{3/2}}+$$
$$\left(2\left(b\,(c d-b e)\left(8 A c^2 d^2+b^2 e\,(3 B d-4 A e)-b c d\,(4 B d+3 A e)\right)+c\left(16 A c^3 d^3+15 b^2 B c d^2 e-b^3 e^2\,(3 B d-4 A e)-8 b c^2 d^2\,(B d+3 A e)\right)x\right)\right)\Big/$$
$$\left(3 b^4 d^2\,(c d-b e)^2\,\sqrt{d+e x}\,\sqrt{b x+c x^2}\right)+$$
$$\left(2 e\left(16 A c^4 d^4-b^3 c d e^2\,(9 B d-7 A e)-8 b c^3 d^3\,(B d+4 A e)+b^2 c^2 d^2 e\,(19 B d+9 A e)+b^4\left(6 B d e^3-8 A e^4\right)\right)\sqrt{b x+c x^2}\right)\Big/\left(3 b^4 d^3\,(c d-b e)^3\,\sqrt{d+e x}\right)-$$
$$\left(2\sqrt{c}\,\left(16 A c^4 d^4-b^3 c d e^2\,(9 B d-7 A e)+2 b^4 e^3\,(3 B d-4 A e)-8 b c^3 d^3\,(B d+4 A e)+b^2 c^2 d^2 e\,(19 B d+9 A e)\right)\sqrt{x}\,\sqrt{1+\frac{c x}{b}}\,\sqrt{d+e x}\;\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/$$
$$\left(3\,(-b)^{7/2} d^3\,(c d-b e)^3\,\sqrt{1+\frac{e x}{d}}\,\sqrt{b x+c x^2}\right)+$$
$$\left(2\sqrt{c}\,\left(16 A c^3 d^3+15 b^2 B c d^2 e-b^3 e^2\,(3 B d-4 A e)-8 b c^2 d^2\,(B d+3 A e)\right)\sqrt{x}\,\sqrt{1+\frac{c x}{b}}\,\sqrt{1+\frac{e x}{d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right],\frac{b e}{c d}\right]\right)\Big/$$
$$\left(3\,(-b)^{7/2} d^2\,(c d-b e)^2\,\sqrt{d+e x}\,\sqrt{b x+c x^2}\right)$$

Result (type 4, 628 leaves) :

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

$$2\left(b\left(3\,b^4\,e^4\,(B\,d-A\,e)\,x^2\,(b+c\,x)^2+b\,c^3\,(b\,B-A\,c)\,d^3\,(-c\,d+b\,e)\,x^2\,(d+e\,x)+\right.\right.$$
$$c^3\,d^3\,\left(8\,A\,c^2\,d+10\,b^2\,B\,e-b\,c\,(5\,B\,d+13\,A\,e)\right)x^2\,(b+c\,x)\,(d+e\,x)+A\,b\,d\,(-c\,d+b\,e)^3$$
$$\left.(b+c\,x)^2\,(d+e\,x)+(c\,d-b\,e)^3\,(-3\,b\,B\,d+8\,A\,c\,d+5\,A\,b\,e)\,x\,(b+c\,x)^2\,(d+e\,x)\right)-$$
$$\sqrt{\frac{b}{c}}\,c\,x\,(b+c\,x)\left(\sqrt{\frac{b}{c}}\,\left(16\,A\,c^4\,d^4+2\,b^4\,e^3\,(3\,B\,d-4\,A\,e)-8\,b\,c^3\,d^3\,(B\,d+4\,A\,e)+\right.\right.$$
$$\left.b^3\,c\,d\,e^2\,(-9\,B\,d+7\,A\,e)+b^2\,c^2\,d^2\,e\,(19\,B\,d+9\,A\,e)\right)(b+c\,x)\,(d+e\,x)+$$
$$i\,b\,e\,\left(16\,A\,c^4\,d^4+2\,b^4\,e^3\,(3\,B\,d-4\,A\,e)-8\,b\,c^3\,d^3\,(B\,d+4\,A\,e)+b^3\,c\,d\,e^2\,(-9\,B\,d+7\,A\,e)+\right.$$
$$\left.b^2\,c^2\,d^2\,e\,(19\,B\,d+9\,A\,e)\right)\sqrt{1+\frac{b}{c\,x}}\,\sqrt{1+\frac{d}{e\,x}}\,x^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]-$$
$$i\,b\,e\,(c\,d-b\,e)\,\left(8\,A\,c^3\,d^3+3\,b^2\,c\,d\,e\,(2\,B\,d-A\,e)-b\,c^2\,d^2\,(4\,B\,d+9\,A\,e)+\right.$$
$$\left.\left.\left.b^3\,(-6\,B\,d\,e^2+8\,A\,e^3)\right)\sqrt{1+\frac{b}{c\,x}}\,\sqrt{1+\frac{d}{e\,x}}\,x^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right],\frac{c\,d}{b\,e}\right]\right)\right)$$

Problem 1284: Result more than twice size of optimal antiderivative.

$$\int (A+B\,x)\,(d+e\,x)^5\,(a+c\,x^2)\,dx$$

Optimal (type 1, 108 leaves, 2 steps):

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

Result (type 1, 233 leaves):

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

Problem 1463: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{A+B x}{\sqrt{d+e x}\,\left(2 A B d-A^2 e-B^2 e x^2\right)}\,dx$$

Optimal (type 3, 155 leaves, 4 steps):

$$-\frac{\text{Log}\left[B d-A e-\sqrt{2}\,\sqrt{B}\,\sqrt{2 B d-A e}\,\sqrt{d+e x}+B (d+e x)\right]}{\sqrt{2}\,\sqrt{B}\,e\sqrt{2 B d-A e}}+\frac{\text{Log}\left[B d-A e+\sqrt{2}\,\sqrt{B}\,\sqrt{2 B d-A e}\,\sqrt{d+e x}+B (d+e x)\right]}{\sqrt{2}\,\sqrt{B}\,e\sqrt{2 B d-A e}}$$

Result (type 3, 259 leaves):

$$\left(\frac{\left(i A e+\sqrt{A}\,\sqrt{e}\,\sqrt{-2 B d+A e}\right) \text{ArcTanh}\left[\frac{\sqrt{B}\,\sqrt{d+e x}}{\sqrt{B d-i \sqrt{A}\,\sqrt{e}\,\sqrt{-2 B d+A e}}}\right]}{\sqrt{B d-i \sqrt{A}\,\sqrt{e}\,\sqrt{-2 B d+A e}}}+\frac{\left(-i A e+\sqrt{A}\,\sqrt{e}\,\sqrt{-2 B d+A e}\right) \text{ArcTanh}\left[\frac{\sqrt{B}\,\sqrt{d+e x}}{\sqrt{B d+i \sqrt{A}\,\sqrt{e}\,\sqrt{-2 B d+A e}}}\right]}{\sqrt{B d+i \sqrt{A}\,\sqrt{e}\,\sqrt{-2 B d+A e}}}\right)\Big/\left(\sqrt{A}\,\sqrt{B}\,e^{3/2}\sqrt{-2 B d+A e}\right)$$

Problem 1464: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{A+B x}{\sqrt{\frac{A^2 e-B^2 e}{2 A B}+e x}\,\left(1+x^2\right)}\,dx$$

Optimal (type 3, 133 leaves, 6 steps):

$$-\frac{\sqrt{2}\,\sqrt{A}\,\sqrt{B}\,\text{ArcTan}\left[\frac{A}{B}-\frac{\sqrt{A}\,\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2 x\right)}}{\sqrt{B}\,\sqrt{e}}\right]}{\sqrt{e}}+\frac{\sqrt{2}\,\sqrt{A}\,\sqrt{B}\,\text{ArcTan}\left[\frac{A}{B}+\frac{\sqrt{A}\,\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2 x\right)}}{\sqrt{B}\,\sqrt{e}}\right]}{\sqrt{e}}$$

Result (type 3, 142 leaves):

$$-\frac{1}{\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}}$$

$$\mathbb{i}\sqrt{2}\sqrt{A}\sqrt{B}\sqrt{\frac{A}{B}-\frac{B}{A}+2x}\left(\text{ArcTanh}\left[\frac{\sqrt{A}\sqrt{B}\sqrt{\frac{A}{B}-\frac{B}{A}+2x}}{A-\mathbb{i}B}\right]-\text{ArcTanh}\left[\frac{\sqrt{A}\sqrt{B}\sqrt{\frac{A}{B}-\frac{B}{A}+2x}}{A+\mathbb{i}B}\right]\right)$$

Problem 1466: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{A+Bx}{\sqrt{d+ex}\left(1+x^2\right)}\,dx$$

Optimal (type 3, 440 leaves, 10 steps):

$$\frac{\left(Ae-B\left(d-\sqrt{d^2+e^2}\right)\right)\text{ArcTanh}\left[\frac{\sqrt{d+\sqrt{d^2+e^2}}-\sqrt{2}\sqrt{d+ex}}{\sqrt{d-\sqrt{d^2+e^2}}}\right]}{\sqrt{2}\sqrt{d^2+e^2}\sqrt{d-\sqrt{d^2+e^2}}}-$$

$$\frac{\left(Ae-B\left(d-\sqrt{d^2+e^2}\right)\right)\text{ArcTanh}\left[\frac{\sqrt{d+\sqrt{d^2+e^2}}+\sqrt{2}\sqrt{d+ex}}{\sqrt{d-\sqrt{d^2+e^2}}}\right]}{\sqrt{2}\sqrt{d^2+e^2}\sqrt{d-\sqrt{d^2+e^2}}}-$$

$$\left(\left(Ae-B\left(d+\sqrt{d^2+e^2}\right)\right)\text{Log}\left[d+\sqrt{d^2+e^2}+ex-\sqrt{2}\sqrt{d+\sqrt{d^2+e^2}}\sqrt{d+ex}\right]\right)\Big/$$

$$\left(2\sqrt{2}\sqrt{d^2+e^2}\sqrt{d+\sqrt{d^2+e^2}}\right)+$$

$$\left(\left(Ae-B\left(d+\sqrt{d^2+e^2}\right)\right)\text{Log}\left[d+\sqrt{d^2+e^2}+ex+\sqrt{2}\sqrt{d+\sqrt{d^2+e^2}}\sqrt{d+ex}\right]\right)\Big/$$

$$\left(2\sqrt{2}\sqrt{d^2+e^2}\sqrt{d+\sqrt{d^2+e^2}}\right)$$

Result (type 3, 89 leaves):

$$-\frac{\mathbb{i}\left(A-\mathbb{i}B\right)\text{ArcTanh}\left[\frac{\sqrt{d+ex}}{\sqrt{d-\mathbb{i}e}}\right]}{\sqrt{d-\mathbb{i}e}}+\frac{\mathbb{i}\left(A+\mathbb{i}B\right)\text{ArcTanh}\left[\frac{\sqrt{d+ex}}{\sqrt{d+\mathbb{i}e}}\right]}{\sqrt{d+\mathbb{i}e}}$$

Problem 1467: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 202 leaves, 12 steps):

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

Result (type 3, 60 leaves):

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

Problem 1468: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 45 leaves, 6 steps):

$$-\sqrt{2}\ \text{ArcTan}\left[3-\sqrt{2}\ \sqrt{4+3x}\right]+\sqrt{2}\ \text{ArcTan}\left[3+\sqrt{8+6x}\right]$$

Result (type 3, 59 leaves):

$$\frac{(1-3i)\ \text{ArcTan}\left[\frac{\sqrt{4+3x}}{\sqrt{-4-3i}}\right]}{\sqrt{-4-3i}}+\frac{(1+3i)\ \text{ArcTan}\left[\frac{\sqrt{4+3x}}{\sqrt{-4+3i}}\right]}{\sqrt{-4+3i}}$$

Problem 1469: Result unnecessarily involves imaginary or complex numbers.

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

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

$$-\frac{\text{Log}\left[3+x-\sqrt{2}\ \sqrt{4+3\ x}\right]}{\sqrt{2}}+\frac{\text{Log}\left[3+x+\sqrt{2}\ \sqrt{4+3\ x}\right]}{\sqrt{2}}$$

Result (type 3, 59 leaves):

$$-\frac{(3+\mathrm{i})\ \text{ArcTan}\left[\frac{\sqrt{4+3\ x}}{\sqrt{-4-3\ \mathrm{i}}}\right]}{\sqrt{-4-3\ \mathrm{i}}}-\frac{(3-\mathrm{i})\ \text{ArcTan}\left[\frac{\sqrt{4+3\ x}}{\sqrt{-4+3\ \mathrm{i}}}\right]}{\sqrt{-4+3\ \mathrm{i}}}$$

Problem 1471: Result more than twice size of optimal antiderivative.

$$\int\frac{-2+x}{\sqrt{-3+x}\ \left(-8+x^2\right)}\,dx$$

Optimal (type 3, 45 leaves, 4 steps):

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

Result (type 3, 91 leaves):

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

Problem 1472: Result unnecessarily involves imaginary or complex numbers.

$$\int(A+B\,x)\ \sqrt{d+e\,x}\ \sqrt{a+c\,x^2}\,dx$$

Optimal (type 4, 438 leaves, 7 steps):

$$-\frac{1}{105\,c\,e^2}2\sqrt{d+e\,x}\,\left(4\,B\,c\,d^2-7\,A\,c\,d\,e+5\,a\,B\,e^2-3\,c\,e\,\left(B\,d+7\,A\,e\right)\,x\right)\,\sqrt{a+c\,x^2}\,+$$

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

$$\left(4\,\sqrt{-a}\,\left(4\,B\,c\,d^3-7\,A\,c\,d^2\,e+8\,a\,B\,d\,e^2+21\,a\,A\,e^3\right)\,\sqrt{d+e\,x}\,\sqrt{1+\frac{c\,x^2}{a}}\,\text{EllipticE}\left[\right.\right.$$

$$\left.\left.\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right],\,-\frac{2\,a\,e}{\sqrt{-a}\,\sqrt{c}\,d-a\,e}\right]\right)\Bigg/\left(105\,\sqrt{c}\,e^3\,\sqrt{\frac{\sqrt{c}\,\left(d+e\,x\right)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{a+c\,x^2}\right)+$$

$$\left(4\,\sqrt{-a}\,\left(c\,d^2+a\,e^2\right)\,\left(4\,B\,c\,d^2-7\,A\,c\,d\,e+5\,a\,B\,e^2\right)\,\sqrt{\frac{\sqrt{c}\,\left(d+e\,x\right)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{1+\frac{c\,x^2}{a}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right],\,-\frac{2\,a\,e}{\sqrt{-a}\,\sqrt{c}\,d-a\,e}\right]\right)\Bigg/\left(105\,c^{3/2}\,e^3\,\sqrt{d+e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 622 leaves) :

$$\frac{1}{105\sqrt{a+c\,x^2}}\sqrt{d+e\,x}\left(\frac{1}{c\,e^2}2\left(a+c\,x^2\right)\left(10\,a\,B\,e^2+7\,A\,c\,e\left(d+3\,e\,x\right)+B\,c\left(-4\,d^2+3\,d\,e\,x+15\,e^2\,x^2\right)\right)+\right.$$

$$\frac{1}{c\,e^4\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\left(d+e\,x\right)}$$

$$4\left(e^2\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\left(4\,B\,c\,d^3-7\,A\,c\,d^2\,e+8\,a\,B\,d\,e^2+21\,a\,A\,e^3\right)\left(a+c\,x^2\right)-\right.$$

$$\sqrt{c}\left(i\sqrt{c}\,d-\sqrt{a}\,e\right)\left(4\,B\,c\,d^3-7\,A\,c\,d^2\,e+8\,a\,B\,d\,e^2+21\,a\,A\,e^3\right)\sqrt{\frac{e\left(\frac{i\sqrt{a}}{\sqrt{c}}+x\right)}{d+e\,x}}$$

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

$$\sqrt{a}\,e\left(\sqrt{c}\,d+i\sqrt{a}\,e\right)\left(B\left(-4\,c\,d^2+3\,i\sqrt{a}\,\sqrt{c}\,d\,e-5\,a\,e^2\right)+7\,A\left(c\,d\,e+3\,i\sqrt{a}\,\sqrt{c}\,e^2\right)\right)$$

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

$$\left.\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\right],\frac{\sqrt{c}\,d-i\sqrt{a}\,e}{\sqrt{c}\,d+i\sqrt{a}\,e}\right]\right)\right)$$

Problem 1473: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 365 leaves, 6 steps):

$$-\frac{2\sqrt{d+e x}\,\left(4 B d-5 A e-3 B e x\right)\sqrt{a+c x^2}}{15 e^2}-\left(4\sqrt{-a}\,\left(4 B c d^2-5 A c d e+3 a B e^2\right)\sqrt{d+e x}\,\sqrt{1+\frac{c x^2}{a}}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right],-\frac{2 a e}{\sqrt{-a}\,\sqrt{c}\,d-a e}\right]\right)\Bigg/\left(15\sqrt{c}\,e^3\sqrt{\frac{\sqrt{c}\,\left(d+e x\right)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{a+c x^2}\right)+\left(4\sqrt{-a}\,\left(4 B d-5 A e\right)\left(c d^2+a e^2\right)\sqrt{\frac{\sqrt{c}\,\left(d+e x\right)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{1+\frac{c x^2}{a}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right],-\frac{2 a e}{\sqrt{-a}\,\sqrt{c}\,d-a e}\right]\right)\Bigg/\left(15\sqrt{c}\,e^3\sqrt{d+e x}\,\sqrt{a+c x^2}\right)$$

Result (type 4, 549 leaves) :

$$\frac{1}{15\sqrt{a+c\,x^2}}\sqrt{d+e\,x}\left(\frac{2\left(-4\,B\,d+5\,A\,e+3\,B\,e\,x\right)\left(a+c\,x^2\right)}{e^2}-\right.$$

$$\frac{1}{c\,e^4\sqrt{-d-\frac{\mathrm{i}\sqrt{a}\,e}{\sqrt{c}}}\left(d+e\,x\right)}4\left(-e^2\sqrt{-d-\frac{\mathrm{i}\sqrt{a}\,e}{\sqrt{c}}}\left(4\,B\,c\,d^2-5\,A\,c\,d\,e+3\,a\,B\,e^2\right)\left(a+c\,x^2\right)+\right.$$

$$\sqrt{c}\left(-\mathrm{i}\sqrt{c}\,d+\sqrt{a}\,e\right)\left(-4\,B\,c\,d^2+5\,A\,c\,d\,e-3\,a\,B\,e^2\right)\sqrt{\frac{e\left(\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}+x\right)}{d+e\,x}}\sqrt{-\frac{\frac{\mathrm{i}\sqrt{a}\,e}{\sqrt{c}}-e\,x}{d+e\,x}}$$

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

$$\sqrt{a}\sqrt{c}\,e\left(\sqrt{c}\,d+\mathrm{i}\sqrt{a}\,e\right)\left(4\,B\sqrt{c}\,d-3\,\mathrm{i}\sqrt{a}\,B\,e-5\,A\sqrt{c}\,e\right)\sqrt{\frac{e\left(\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}+x\right)}{d+e\,x}}$$

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

Problem 1474: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 352 leaves, 6 steps):

$$\frac{2\,(4\,B\,d-3\,A\,e+B\,e\,x)\,\sqrt{a+c\,x^2}}{3\,e^2\,\sqrt{d+e\,x}}+\left(4\,\sqrt{-a}\,\sqrt{c}\,(4\,B\,d-3\,A\,e)\,\sqrt{d+e\,x}\,\sqrt{1+\frac{c\,x^2}{a}}\right.$$

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

$$\left(4\,\sqrt{-a}\,\left(4\,B\,c\,d^2-3\,A\,c\,d\,e+a\,B\,e^2\right)\,\sqrt{\frac{\sqrt{c}\,(d+e\,x)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{1+\frac{c\,x^2}{a}}\right.$$

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

Result (type 4, 512 leaves) :

$$\frac{1}{3\sqrt{a+c\,x^2}}\sqrt{d+e\,x}\left(\frac{2\,(4\,B\,d-3\,A\,e+B\,e\,x)\,(a+c\,x^2)}{e^2\,(d+e\,x)}+\right.$$

$$\frac{1}{e^4\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}2\,(d+e\,x)\left(\frac{2\,e^2\,(-4\,B\,d+3\,A\,e)\,\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\,(a+c\,x^2)}{(d+e\,x)^2}+\right.$$

$$\frac{1}{\sqrt{d+e\,x}}2\sqrt{c}\,\left(-i\sqrt{c}\,d+\sqrt{a}\,e\right)\,(-4\,B\,d+3\,A\,e)\,\sqrt{\frac{e\left(\frac{i\sqrt{a}}{\sqrt{c}}+x\right)}{d+e\,x}}$$

$$\sqrt{-\frac{\frac{i\sqrt{a}\,e}{\sqrt{c}}-e\,x}{d+e\,x}}\;\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\right],\frac{\sqrt{c}\,d-i\sqrt{a}\,e}{\sqrt{c}\,d+i\sqrt{a}\,e}\right]-$$

$$\frac{1}{\sqrt{d+e\,x}}2\sqrt{a}\,e\,\left(-4\,B\sqrt{c}\,d-i\sqrt{a}\,B\,e+3\,A\sqrt{c}\,e\right)\sqrt{\frac{e\left(\frac{i\sqrt{a}}{\sqrt{c}}+x\right)}{d+e\,x}}$$

$$\left.\left.\sqrt{-\frac{\frac{i\sqrt{a}\,e}{\sqrt{c}}-e\,x}{d+e\,x}}\;\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\right],\frac{\sqrt{c}\,d-i\sqrt{a}\,e}{\sqrt{c}\,d+i\sqrt{a}\,e}\right]\right)\right)$$

Problem 1475: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(A+B\,x)\,\sqrt{a+c\,x^2}}{(d+e\,x)^{5/2}}\,dx$$

Optimal (type 4, 420 leaves, 6 steps):

$$-\left(\left(2\left(4Bcd^3-Acd^2e+2aBde^2+aAe^3+e\left(5Bcd^2-2Acde+3aBe^2\right)x\right)\sqrt{a+cx^2}\right)\Big/\left(3e^2\left(cd^2+ae^2\right)(d+ex)^{3/2}\right)\right)-\left(4\sqrt{-a}\sqrt{c}\left(4Bcd^2-Acde+3aBe^2\right)\sqrt{d+ex}\sqrt{1+\frac{cx^2}{a}}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right],-\frac{2ae}{\sqrt{-a}\sqrt{c}\,d-ae}\right]\right)\Big/\left(3e^3\left(cd^2+ae^2\right)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\sqrt{a+cx^2}\right)+\left(4\sqrt{-a}\sqrt{c}\,(4Bd-Ae)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\sqrt{1+\frac{cx^2}{a}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right],-\frac{2ae}{\sqrt{-a}\sqrt{c}\,d-ae}\right]\right)\Big/\left(3e^3\sqrt{d+ex}\sqrt{a+cx^2}\right)$$

Result (type 4, 685 leaves) :

$$\sqrt{d+e\,x}\,\sqrt{a+c\,x^2}\,\left(-\frac{2\,(-B\,d+A\,e)}{3\,e^2\,(d+e\,x)^2}-\frac{2\,(5\,B\,c\,d^2-2\,A\,c\,d\,e+3\,a\,B\,e^2)}{3\,e^2\,(c\,d^2+a\,e^2)\,(d+e\,x)}\right)-$$

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

$$4\,(d+e\,x)^{3/2}\left(-\sqrt{-d-\frac{i\,\sqrt{a}\,e}{\sqrt{c}}}\,(4\,B\,c\,d^2-A\,c\,d\,e+3\,a\,B\,e^2)\left(\frac{a\,e^2}{(d+e\,x)^2}+c\left(-1+\frac{d}{d+e\,x}\right)^2\right)+\right.$$

$$\frac{1}{\sqrt{d+e\,x}}\,i\,\sqrt{c}\,\left(\sqrt{c}\,d+i\,\sqrt{a}\,e\right)\,(4\,B\,c\,d^2-A\,c\,d\,e+3\,a\,B\,e^2)\,\sqrt{1-\frac{d}{d+e\,x}-\frac{i\,\sqrt{a}\,e}{\sqrt{c}\,(d+e\,x)}}$$

$$\sqrt{1-\frac{d}{d+e\,x}+\frac{i\,\sqrt{a}\,e}{\sqrt{c}\,(d+e\,x)}}\;\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\,\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\right],\frac{\sqrt{c}\,d-i\,\sqrt{a}\,e}{\sqrt{c}\,d+i\,\sqrt{a}\,e}\right]-$$

$$\frac{1}{\sqrt{d+e\,x}}\sqrt{a}\,\sqrt{c}\,e\,\left(\sqrt{c}\,d+i\,\sqrt{a}\,e\right)\left(-4\,B\,\sqrt{c}\,d+3\,i\,\sqrt{a}\,B\,e+A\,\sqrt{c}\,e\right)$$

$$\sqrt{1-\frac{d}{d+e\,x}-\frac{i\,\sqrt{a}\,e}{\sqrt{c}\,(d+e\,x)}}\;\sqrt{1-\frac{d}{d+e\,x}+\frac{i\,\sqrt{a}\,e}{\sqrt{c}\,(d+e\,x)}}$$

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\,\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\right],\frac{\sqrt{c}\,d-i\,\sqrt{a}\,e}{\sqrt{c}\,d+i\,\sqrt{a}\,e}\right]\right)$$

Problem 1476: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(A+B\,x)\,(a+c\,x^2)^{3/2}}{\sqrt{d+e\,x}}\,dx$$

Optimal (type 4, 498 leaves, 7 steps):

$$-\frac{1}{315\, e^4} 4 \sqrt{d+e x} \left(32 B c d^3-36 A c d^2 e+33 a B d e^2-45 a A e^3-3 e \left(8 B c d^2-9 A c d e+7 a B e^2\right) x\right) \sqrt{a+c x^2}-\frac{2 \sqrt{d+e x} \left(8 B d-9 A e-7 B e x\right) \left(a+c x^2\right)^{3/2}}{63\, e^2}+$$

$$\left(8 \sqrt{-a} \left(36 A c d e \left(c d^2+2 a e^2\right)-B \left(32 c^2 d^4+57 a c d^2 e^2+21 a^2 e^4\right)\right) \sqrt{d+e x} \sqrt{1+\frac{c x^2}{a}} \, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\, x}{\sqrt{-a}}}}{\sqrt{2}}\right], -\frac{2 a e}{\sqrt{-a} \sqrt{c}\, d-a e}\right]\right) \Bigg/ \left(315 \sqrt{c}\, e^5 \sqrt{\frac{\sqrt{c} \left(d+e x\right)}{\sqrt{c}\, d+\sqrt{-a}\, e}} \sqrt{a+c x^2}\right)+$$

$$\left(8 \sqrt{-a} \left(c d^2+a e^2\right) \left(32 B c d^3-36 A c d^2 e+33 a B d e^2-45 a A e^3\right) \sqrt{\frac{\sqrt{c} \left(d+e x\right)}{\sqrt{c}\, d+\sqrt{-a}\, e}} \sqrt{1+\frac{c x^2}{a}} \, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\, x}{\sqrt{-a}}}}{\sqrt{2}}\right], -\frac{2 a e}{\sqrt{-a} \sqrt{c}\, d-a e}\right]\right) \Bigg/ \left(315 \sqrt{c}\, e^5 \sqrt{d+e x} \sqrt{a+c x^2}\right)$$

Result (type 4, 818 leaves) :

$$\sqrt{d+e\,x}\,\sqrt{a+c\,x^2}\left(\frac{2\left(-64\,B\,c\,d^3+72\,A\,c\,d^2\,e-106\,a\,B\,d\,e^2+135\,a\,A\,e^3\right)}{315\,e^4}+\frac{2\left(48\,B\,c\,d^2-54\,A\,c\,d\,e+77\,a\,B\,e^2\right)x}{315\,e^3}+\frac{2\,c\left(-8\,B\,d+9\,A\,e\right)x^2}{63\,e^2}+\frac{2\,B\,c\,x^3}{9\,e}\right)-\frac{1}{315\,c\,e^6\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\sqrt{a+\frac{c\,(d+e\,x)^2\left(-1+\frac{d}{d+e\,x}\right)^2}{e^2}}}$$

$$8\,(d+e\,x)^{3/2}\left(-\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\left(-36\,A\,c\,d\,e\left(c\,d^2+2\,a\,e^2\right)+B\left(32\,c^2\,d^4+57\,a\,c\,d^2\,e^2+21\,a^2\,e^4\right)\right)\left(\frac{a\,e^2}{(d+e\,x)^2}+c\left(-1+\frac{d}{d+e\,x}\right)^2\right)+\frac{1}{\sqrt{d+e\,x}}\,i\sqrt{c}\left(\sqrt{c}\,d+i\sqrt{a}\,e\right)\left(-36\,A\,c\,d\,e\left(c\,d^2+2\,a\,e^2\right)+B\left(32\,c^2\,d^4+57\,a\,c\,d^2\,e^2+21\,a^2\,e^4\right)\right)\sqrt{1-\frac{d}{d+e\,x}-\frac{i\sqrt{a}\,e}{\sqrt{c}\,(d+e\,x)}}\sqrt{1-\frac{d}{d+e\,x}+\frac{i\sqrt{a}\,e}{\sqrt{c}\,(d+e\,x)}}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\right],\frac{\sqrt{c}\,d-i\sqrt{a}\,e}{\sqrt{c}\,d+i\sqrt{a}\,e}\right]+\frac{1}{\sqrt{d+e\,x}}\sqrt{a}\,\sqrt{c}\,e\left(\sqrt{c}\,d+i\sqrt{a}\,e\right)\left(-9\,A\sqrt{c}\,e\left(4\,c\,d^2-3\,i\sqrt{a}\,\sqrt{c}\,d\,e+5\,a\,e^2\right)+B\left(32\,c^{3/2}\,d^3-24\,i\sqrt{a}\,c\,d^2\,e+33\,a\sqrt{c}\,d\,e^2-21\,i\,a^{3/2}\,e^3\right)\right)\sqrt{1-\frac{d}{d+e\,x}-\frac{i\sqrt{a}\,e}{\sqrt{c}\,(d+e\,x)}}\sqrt{1-\frac{d}{d+e\,x}+\frac{i\sqrt{a}\,e}{\sqrt{c}\,(d+e\,x)}}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\right],\frac{\sqrt{c}\,d-i\sqrt{a}\,e}{\sqrt{c}\,d+i\sqrt{a}\,e}\right]\right)$$

Problem 1477: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 448 leaves, 7 steps):

$$\frac{1}{35\,e^4}4\sqrt{d+e\,x}\,\left(5\,a\,B\,e^2+4\,c\,d\,\left(8\,B\,d-7\,A\,e\right)-3\,c\,e\,\left(8\,B\,d-7\,A\,e\right)\,x\right)\,\sqrt{a+c\,x^2}\,+$$

$$\frac{2\,\left(8\,B\,d-7\,A\,e+B\,e\,x\right)\,\left(a+c\,x^2\right)^{3/2}}{7\,e^2\,\sqrt{d+e\,x}}+$$

$$\left(8\,\sqrt{-a}\,\sqrt{c}\,\left(32\,B\,c\,d^3-28\,A\,c\,d^2\,e+29\,a\,B\,d\,e^2-21\,a\,A\,e^3\right)\,\sqrt{d+e\,x}\,\sqrt{1+\frac{c\,x^2}{a}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right],\,-\frac{2\,a\,e}{\sqrt{-a}\,\sqrt{c}\,d-a\,e}\right]\right)\Bigg/\left(35\,e^5\,\sqrt{\frac{\sqrt{c}\,\left(d+e\,x\right)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{a+c\,x^2}\right)-$$

$$\left(8\,\sqrt{-a}\,\left(c\,d^2+a\,e^2\right)\,\left(32\,B\,c\,d^2-28\,A\,c\,d\,e+5\,a\,B\,e^2\right)\,\sqrt{\frac{\sqrt{c}\,\left(d+e\,x\right)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{1+\frac{c\,x^2}{a}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right],\,-\frac{2\,a\,e}{\sqrt{-a}\,\sqrt{c}\,d-a\,e}\right]\right)\Bigg/\left(35\,\sqrt{c}\,e^5\,\sqrt{d+e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 661 leaves) :

$$\frac{1}{35\sqrt{a+c\,x^2}}\sqrt{d+e\,x}\left(\frac{1}{e^4\,(d+e\,x)}2\,\left(a+c\,x^2\right)\,\left(-7\,A\,e\,\left(5\,a\,e^2+c\,\left(8\,d^2+2\,d\,e\,x-e^2\,x^2\right)\right)+\right.\right.$$

$$\left.B\,\left(5\,a\,e^2\,(10\,d+3\,e\,x)+c\,\left(64\,d^3+16\,d^2\,e\,x-8\,d\,e^2\,x^2+5\,e^3\,x^3\right)\right)\right)+\frac{1}{e^6\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\,(d+e\,x)}$$

$$8\left(e^2\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\,\left(-32\,B\,c\,d^3+28\,A\,c\,d^2\,e-29\,a\,B\,d\,e^2+21\,a\,A\,e^3\right)\,\left(a+c\,x^2\right)+\right.$$

$$\sqrt{c}\,\left(-i\sqrt{c}\,d+\sqrt{a}\,e\right)\,\left(-32\,B\,c\,d^3+28\,A\,c\,d^2\,e-29\,a\,B\,d\,e^2+21\,a\,A\,e^3\right)$$

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

$$\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\right],\frac{\sqrt{c}\,d-i\sqrt{a}\,e}{\sqrt{c}\,d+i\sqrt{a}\,e}\right]+\sqrt{a}\,e\,\left(\sqrt{c}\,d+i\sqrt{a}\,e\right)$$

$$\left(32\,B\,c\,d^2-24\,i\sqrt{a}\,B\sqrt{c}\,d\,e-28\,A\,c\,d\,e+5\,a\,B\,e^2+21\,i\sqrt{a}\,A\sqrt{c}\,e^2\right)\sqrt{\frac{e\left(\frac{i\sqrt{a}}{\sqrt{c}}+x\right)}{d+e\,x}}$$

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

Problem 1478: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 437 leaves, 7 steps):

$$-\frac{4\left(9\,a\,B\,e^2+4\,c\,d\,\left(8\,B\,d-5\,A\,e\right)+c\,e\,\left(8\,B\,d-5\,A\,e\right)\,x\right)\,\sqrt{a+c\,x^2}}{15\,e^4\,\sqrt{d+e\,x}}+$$

$$\frac{2\,\left(8\,B\,d-5\,A\,e+3\,B\,e\,x\right)\,\left(a+c\,x^2\right)^{3/2}}{15\,e^2\,\left(d+e\,x\right)^{3/2}}-$$

$$\left(8\,\sqrt{-a}\,\sqrt{c}\,\left(9\,a\,B\,e^2+4\,c\,d\,\left(8\,B\,d-5\,A\,e\right)\right)\,\sqrt{d+e\,x}\,\sqrt{1+\frac{c\,x^2}{a}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right],-\frac{2\,a\,e}{\sqrt{-a}\,\sqrt{c}\,d-a\,e}\right]\right)\Bigg/\left(15\,e^5\,\sqrt{\frac{\sqrt{c}\,\left(d+e\,x\right)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{a+c\,x^2}\right)+$$

$$\left(8\,\sqrt{-a}\,\sqrt{c}\,\left(32\,B\,c\,d^3-20\,A\,c\,d^2\,e+17\,a\,B\,d\,e^2-5\,a\,A\,e^3\right)\,\sqrt{\frac{\sqrt{c}\,\left(d+e\,x\right)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{1+\frac{c\,x^2}{a}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right],-\frac{2\,a\,e}{\sqrt{-a}\,\sqrt{c}\,d-a\,e}\right]\right)\Bigg/\left(15\,e^5\,\sqrt{d+e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 628 leaves) :

$$\frac{1}{15\sqrt{a+c x^2}}\sqrt{d+e x}\left(-\frac{1}{e^4 (d+e x)^2}2 (a+c x^2) \left(5 a A e^3+5 a B e^2 (2 d+3 e x)-5 A c e (8 d^2+10 d e x+e^2 x^2)+B c (64 d^3+80 d^2 e x+8 d e^2 x^2-3 e^3 x^3)\right)-\frac{1}{e^6\sqrt{-d-\frac{i\sqrt{a} e}{\sqrt{c}}}(d+e x)}8\left(-e^2\sqrt{-d-\frac{i\sqrt{a} e}{\sqrt{c}}}(32 B c d^2-20 A c d e+9 a B e^2)(a+c x^2)+\sqrt{c}\left(-i\sqrt{c} d+\sqrt{a} e\right)(-32 B c d^2+20 A c d e-9 a B e^2)\sqrt{\frac{e\left(\frac{i\sqrt{a}}{\sqrt{c}}+x\right)}{d+e x}}\sqrt{-\frac{\frac{i\sqrt{a} e}{\sqrt{c}}-e x}{d+e x}}(d+e x)^{3/2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\sqrt{a} e}{\sqrt{c}}}}{\sqrt{d+e x}}\right],\frac{\sqrt{c} d-i\sqrt{a} e}{\sqrt{c} d+i\sqrt{a} e}\right]+\sqrt{a}\sqrt{c}\, e\left(B\left(32 c d^2+8 i\sqrt{a}\sqrt{c} d e+9 a e^2\right)-5 A\left(4 c d e+i\sqrt{a}\sqrt{c} e^2\right)\right)\sqrt{\frac{e\left(\frac{i\sqrt{a}}{\sqrt{c}}+x\right)}{d+e x}}\sqrt{-\frac{\frac{i\sqrt{a} e}{\sqrt{c}}-e x}{d+e x}}(d+e x)^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\sqrt{a} e}{\sqrt{c}}}}{\sqrt{d+e x}}\right],\frac{\sqrt{c} d-i\sqrt{a} e}{\sqrt{c} d+i\sqrt{a} e}\right]\right)\right)$$

Problem 1479: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 541 leaves, 7 steps):

$$\left(4 c \left(32 B c d^3 - 12 A c d^2 e + 29 a B d e^2 - 9 a A e^3 + e \left(8 B c d^2 - 3 A c d e + 5 a B e^2\right) x\right) \sqrt{a + c x^2}\right) \Big/ \left(15 e^4 \left(c d^2 + a e^2\right) \sqrt{d + e x}\right) -$$

$$\left(2 \left(2 B \left(4 c d^3 + a d e^2\right) - 3 A \left(c d^2 e - a e^3\right) + e \left(11 B c d^2 - 6 A c d e + 5 a B e^2\right) x\right) \left(a + c x^2\right)^{3/2}\right) \Big/ \left(15 e^2 \left(c d^2 + a e^2\right) (d + e x)^{5/2}\right) + \left(8 \sqrt{-a}\, c^{3/2} \left(32 B c d^3 - 12 A c d^2 e + 29 a B d e^2 - 9 a A e^3\right) \sqrt{d + e x} \sqrt{1 + \frac{c x^2}{a}}\, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{1 - \frac{\sqrt{c}\, x}{\sqrt{-a}}}}{\sqrt{2}}\right], -\frac{2 a e}{\sqrt{-a} \sqrt{c}\, d - a e}\right]\right) \Big/ \left(15 e^5 \left(c d^2 + a e^2\right) \sqrt{\frac{\sqrt{c}\, (d + e x)}{\sqrt{c}\, d + \sqrt{-a}\, e}} \sqrt{a + c x^2}\right) -$$

$$\left(8 \sqrt{-a} \sqrt{c} \left(32 B c d^2 - 12 A c d e + 5 a B e^2\right) \sqrt{\frac{\sqrt{c}\, (d + e x)}{\sqrt{c}\, d + \sqrt{-a}\, e}} \sqrt{1 + \frac{c x^2}{a}}\, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{1 - \frac{\sqrt{c}\, x}{\sqrt{-a}}}}{\sqrt{2}}\right], -\frac{2 a e}{\sqrt{-a} \sqrt{c}\, d - a e}\right]\right) \Big/ \left(15 e^5 \sqrt{d + e x} \sqrt{a + c x^2}\right)$$

Result (type 4, 789 leaves) :

$$\sqrt{d+e\,x}\,\sqrt{a+c\,x^2}\left(\frac{2\,B\,c}{3\,e^4}-\frac{2\,\left(-B\,d+A\,e\right)\,\left(c\,d^2+a\,e^2\right)}{5\,e^4\,\left(d+e\,x\right)^3}+\right.$$

$$\left.\frac{2\,\left(-17\,B\,c\,d^2+12\,A\,c\,d\,e-5\,a\,B\,e^2\right)}{15\,e^4\,\left(d+e\,x\right)^2}-\frac{2\,c\,\left(-73\,B\,c\,d^3+33\,A\,c\,d^2\,e-61\,a\,B\,d\,e^2+21\,a\,A\,e^3\right)}{15\,e^4\,\left(c\,d^2+a\,e^2\right)\,\left(d+e\,x\right)}\right)-$$

$$\frac{1}{15\,e^6\,\sqrt{-d-\frac{i\,\sqrt{a}\,e}{\sqrt{c}}}\,\left(c\,d^2+a\,e^2\right)\,\sqrt{a+\frac{c\,(d+e\,x)^2\,\left(-1+\frac{d}{d+e\,x}\right)^2}{e^2}}}\,8\,c\,\left(d+e\,x\right)^{3/2}$$

$$\left(\sqrt{-d-\frac{i\,\sqrt{a}\,e}{\sqrt{c}}}\,\left(32\,B\,c\,d^3-12\,A\,c\,d^2\,e+29\,a\,B\,d\,e^2-9\,a\,A\,e^3\right)\,\left(\frac{a\,e^2}{\left(d+e\,x\right)^2}+c\,\left(-1+\frac{d}{d+e\,x}\right)^2\right)+\right.$$

$$\frac{1}{\sqrt{d+e\,x}}\sqrt{c}\,\left(-i\,\sqrt{c}\,d+\sqrt{a}\,e\right)\,\left(32\,B\,c\,d^3-12\,A\,c\,d^2\,e+29\,a\,B\,d\,e^2-9\,a\,A\,e^3\right)$$

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

$$\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\,\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\right],\frac{\sqrt{c}\,d-i\,\sqrt{a}\,e}{\sqrt{c}\,d+i\,\sqrt{a}\,e}\right]+\frac{1}{\sqrt{d+e\,x}}$$

$$\sqrt{a}\,e\,\left(\sqrt{c}\,d+i\,\sqrt{a}\,e\right)\,\left(-32\,B\,c\,d^2+24\,i\,\sqrt{a}\,B\,\sqrt{c}\,d\,e+12\,A\,c\,d\,e-5\,a\,B\,e^2-9\,i\,\sqrt{a}\,A\,\sqrt{c}\,e^2\right)$$

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

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\,\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\right],\frac{\sqrt{c}\,d-i\,\sqrt{a}\,e}{\sqrt{c}\,d+i\,\sqrt{a}\,e}\right]\right)$$

Problem 1480: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 388 leaves, 7 steps):

$$\frac{2\,(3\,B\,d+5\,A\,e)\,\sqrt{d+e\,x}\,\sqrt{a+c\,x^2}}{15\,c}+\frac{2\,B\,(d+e\,x)^{3/2}\,\sqrt{a+c\,x^2}}{5\,c}-$$

$$\left(2\,\sqrt{-a}\,\left(3\,B\,c\,d^2+20\,A\,c\,d\,e-9\,a\,B\,e^2\right)\,\sqrt{d+e\,x}\,\sqrt{1+\frac{c\,x^2}{a}}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right],-\frac{2\,a\,e}{\sqrt{-a}\,\sqrt{c}\,d-a\,e}\right]\right)\Bigg/\left(15\,c^{3/2}\,e\,\sqrt{\frac{\sqrt{c}\,(d+e\,x)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{a+c\,x^2}\right)+$$

$$\left(2\,\sqrt{-a}\,(3\,B\,d+5\,A\,e)\,\left(c\,d^2+a\,e^2\right)\,\sqrt{\frac{\sqrt{c}\,(d+e\,x)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{1+\frac{c\,x^2}{a}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right],-\frac{2\,a\,e}{\sqrt{-a}\,\sqrt{c}\,d-a\,e}\right]\right)\Bigg/\left(15\,c^{3/2}\,e\,\sqrt{d+e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 550 leaves):

$$\frac{1}{15\sqrt{a+c\,x^2}}\sqrt{d+e\,x}\left(\frac{2\,(6\,B\,d+5\,A\,e+3\,B\,e\,x)\,\left(a+c\,x^2\right)}{c}+\right.$$

$$\frac{1}{c^2\,e^2\,\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\,(d+e\,x)}\,2\left(e^2\,\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\,\left(3\,B\,c\,d^2+20\,A\,c\,d\,e-9\,a\,B\,e^2\right)\,\left(a+c\,x^2\right)+\right.$$

$$\sqrt{c}\,\left(-i\sqrt{c}\,d+\sqrt{a}\,e\right)\,\left(3\,B\,c\,d^2+20\,A\,c\,d\,e-9\,a\,B\,e^2\right)\,\sqrt{\frac{e\left(\frac{i\sqrt{a}}{\sqrt{c}}+x\right)}{d+e\,x}}\,\sqrt{-\frac{\frac{i\sqrt{a}\,e}{\sqrt{c}}-e\,x}{d+e\,x}}$$

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

$$i\sqrt{c}\,e\,\left(\sqrt{c}\,d+i\sqrt{a}\,e\right)\,\left(15\,A\,c\,d-9\,a\,B\,e+i\sqrt{a}\,\sqrt{c}\,(3\,B\,d+5\,A\,e)\right)\,\sqrt{\frac{e\left(\frac{i\sqrt{a}}{\sqrt{c}}+x\right)}{d+e\,x}}$$

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

Problem 1481: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 331 leaves, 6 steps):

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

Result (type 4, 464 leaves):

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

Problem 1482: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{A + B x}{\sqrt{d + e x} \sqrt{a + c x^2}} \, dx$$

Optimal (type 4, 288 leaves, 5 steps):

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

Result (type 4, 439 leaves):

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

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

$$\left(\sqrt{a}\,B-i A\sqrt{c}\right)\sqrt{c}\,e\sqrt{\frac{e\left(\frac{i\sqrt{a}}{\sqrt{c}}+x\right)}{d+e x}}\sqrt{-\frac{\frac{i\sqrt{a}\,e}{\sqrt{c}}-e x}{d+e x}}\left(d+e x\right)^{3/2}$$

$$\left.\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e x}}\right],\frac{\sqrt{c}\,d-i\sqrt{a}\,e}{\sqrt{c}\,d+i\sqrt{a}\,e}\right]\right)\right)\Bigg/$$

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

Problem 1483: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 344 leaves, 6 steps):

$$\frac{2\,(B\,d-A\,e)\,\sqrt{a+c\,x^2}}{(c\,d^2+a\,e^2)\,\sqrt{d+e\,x}}+$$

$$\left(2\,\sqrt{-a}\,\sqrt{c}\,(B\,d-A\,e)\,\sqrt{d+e\,x}\,\sqrt{1+\frac{c\,x^2}{a}}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\left.-\frac{2\,a\,e}{\sqrt{-a}\,\sqrt{c}\,d-a\,e}\right]\right)\Bigg/\left(e\,(c\,d^2+a\,e^2)\,\sqrt{\frac{\sqrt{c}\,(d+e\,x)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{a+c\,x^2}\right)-$$

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

$$\left(\sqrt{c}\,e\,\sqrt{d+e\,x}\,\sqrt{a+c\,x^2}\right)$$

Result (type 4, 320 leaves):

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

$$\left(i\,\sqrt{c}\,(B\,d-A\,e)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\,\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\right],\frac{\sqrt{c}\,d-i\,\sqrt{a}\,e}{\sqrt{c}\,d+i\,\sqrt{a}\,e}\right]+\right.$$

$$\left.\left.(\sqrt{a}\,B+i\,A\,\sqrt{c})\,e\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\,\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\right],\frac{\sqrt{c}\,d-i\,\sqrt{a}\,e}{\sqrt{c}\,d+i\,\sqrt{a}\,e}\right]\right)\right)\Bigg/$$

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

Problem 1484: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 345 leaves, 6 steps):

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

Result (type 4, 596 leaves):

$$\frac{\sqrt{d+e\,x}\,\left(-a\,B\,d-a\,A\,e+A\,c\,d\,x-a\,B\,e\,x\right)}{a\,c\,\sqrt{a+c\,x^2}}-$$

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

$$\frac{1}{\sqrt{d+e\,x}}\sqrt{c}\left(-i\sqrt{c}\,d+\sqrt{a}\,e\right)(A\,c\,d-3\,a\,B\,e)\sqrt{1-\frac{d}{d+e\,x}-\frac{i\sqrt{a}\,e}{\sqrt{c}\,(d+e\,x)}}$$

$$\sqrt{1-\frac{d}{d+e\,x}+\frac{i\sqrt{a}\,e}{\sqrt{c}\,(d+e\,x)}}\;\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\right],\frac{\sqrt{c}\,d-i\sqrt{a}\,e}{\sqrt{c}\,d+i\sqrt{a}\,e}\right]-$$

$$\frac{1}{\sqrt{d+e\,x}}\sqrt{a}\left(3\,i\sqrt{a}\,B+A\sqrt{c}\right)\sqrt{c}\,e\left(\sqrt{c}\,d+i\sqrt{a}\,e\right)\sqrt{1-\frac{d}{d+e\,x}-\frac{i\sqrt{a}\,e}{\sqrt{c}\,(d+e\,x)}}$$

$$\left.\left.\sqrt{1-\frac{d}{d+e\,x}+\frac{i\sqrt{a}\,e}{\sqrt{c}\,(d+e\,x)}}\;\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\right],\frac{\sqrt{c}\,d-i\sqrt{a}\,e}{\sqrt{c}\,d+i\sqrt{a}\,e}\right]\right)\right)\Big/$$

$$\left(a\,c^2\,e\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\sqrt{a+\frac{c\,(d+e\,x)^2\left(-1+\frac{d}{d+e\,x}\right)^2}{e^2}}\right)$$

Problem 1485: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 319 leaves, 6 steps):

$$-\frac{(a B-A c x)\sqrt{d+e x}}{a c\sqrt{a+c x^2}}-\frac{A\sqrt{d+e x}\sqrt{1+\frac{c x^2}{a}}\ \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right],-\frac{2 a e}{\sqrt{-a}\sqrt{c}\,d-a e}\right]}{\sqrt{-a}\sqrt{c}\sqrt{\frac{\sqrt{c}\,(d+e x)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\sqrt{a+c x^2}}+$$

$$\left((A c d+a B e)\sqrt{\frac{\sqrt{c}\,(d+e x)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\sqrt{1+\frac{c x^2}{a}}\right.$$

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

Result (type 4, 431 leaves):

$$\frac{1}{a c\sqrt{a+c x^2}}$$

$$\sqrt{d+e x}\left(-a B+A c x-\frac{A e\,(a+c x^2)}{d+e x}-\frac{1}{e}\,\mathrm{i}\,A c\sqrt{-d-\frac{\mathrm{i}\sqrt{a}\,e}{\sqrt{c}}}\sqrt{\frac{e\left(\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}+x\right)}{d+e x}}\sqrt{-\frac{\frac{\mathrm{i}\sqrt{a}\,e}{\sqrt{c}}-e x}{d+e x}}\right.$$

$$\sqrt{d+e x}\ \text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{\mathrm{i}\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e x}}\right],\frac{\sqrt{c}\,d-\mathrm{i}\sqrt{a}\,e}{\sqrt{c}\,d+\mathrm{i}\sqrt{a}\,e}\right]+$$

$$\frac{1}{\sqrt{-d-\frac{\mathrm{i}\sqrt{a}\,e}{\sqrt{c}}}}\sqrt{a}\left(\mathrm{i}\sqrt{a}\,B+A\sqrt{c}\right)\sqrt{\frac{e\left(\frac{\mathrm{i}\sqrt{a}}{\sqrt{c}}+x\right)}{d+e x}}\sqrt{-\frac{\frac{\mathrm{i}\sqrt{a}\,e}{\sqrt{c}}-e x}{d+e x}}$$

$$\left.\sqrt{d+e x}\ \text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{-d-\frac{\mathrm{i}\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e x}}\right],\frac{\sqrt{c}\,d-\mathrm{i}\sqrt{a}\,e}{\sqrt{c}\,d+\mathrm{i}\sqrt{a}\,e}\right]\right)$$

Problem 1486: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 356 leaves, 6 steps):

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

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

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

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

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

Result (type 4, 525 leaves):

$$\Bigg(\sqrt{d+e\,x}\,\Bigg(2\,\big(A\,c\,d\,x+a\,\big(-B\,d+A\,e+B\,e\,x\big)\big)-$$

$$\Bigg(2\,\Bigg(e^2\,\big(A\,c\,d+a\,B\,e\big)\,\sqrt{-d-\frac{i\,\sqrt{a}\,e}{\sqrt{c}}}\,\big(a+c\,x^2\big)+\sqrt{c}\,\big(-i\,\sqrt{c}\,d+\sqrt{a}\,e\big)$$

$$\big(A\,c\,d+a\,B\,e\big)\,\sqrt{\frac{e\,\left(\frac{i\,\sqrt{a}}{\sqrt{c}}+x\right)}{d+e\,x}}\,\sqrt{-\frac{\frac{i\,\sqrt{a}\,e}{\sqrt{c}}-e\,x}{d+e\,x}}\,\big(d+e\,x\big)^{3/2}\,\text{EllipticE}\Big[$$

$$i\,\text{ArcSinh}\Big[\frac{\sqrt{-d-\frac{i\,\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\Big],\,\frac{\sqrt{c}\,d-i\,\sqrt{a}\,e}{\sqrt{c}\,d+i\,\sqrt{a}\,e}\Big]+\sqrt{a}\,\big(i\,\sqrt{a}\,B-A\,\sqrt{c}\big)$$

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

$$\text{EllipticF}\Big[i\,\text{ArcSinh}\Big[\frac{\sqrt{-d-\frac{i\,\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+e\,x}}\Big],\,\frac{\sqrt{c}\,d-i\,\sqrt{a}\,e}{\sqrt{c}\,d+i\,\sqrt{a}\,e}\Big]\Bigg)\Bigg)\Bigg/$$

$$\left(c\,e\,\sqrt{-d-\frac{i\,\sqrt{a}\,e}{\sqrt{c}}}\,\big(d+e\,x\big)\right)\Bigg)\Bigg)\Bigg/\left(2\,a\,\big(c\,d^2+a\,e^2\big)\,\sqrt{a+c\,x^2}\right)$$

Problem 1487: Result more than twice size of optimal antiderivative.

$$\int (A+B\,x)\,\big(d+e\,x\big)^m\,\big(a+c\,x^2\big)^3\,dx$$

Optimal (type 3, 372 leaves, 2 steps):

$$-\frac{(B d-A e)\left(c d^2+a e^2\right)^3 (d+e x)^{1+m}}{e^8 (1+m)}+\frac{\left(c d^2+a e^2\right)^2 \left(7 B c d^2-6 A c d e+a B e^2\right) (d+e x)^{2+m}}{e^8 (2+m)}-\frac{3 c \left(c d^2+a e^2\right) \left(7 B c d^3-5 A c d^2 e+3 a B d e^2-a A e^3\right) (d+e x)^{3+m}}{e^8 (3+m)}-\frac{1}{e^8 (4+m)} c \left(4 A c d e \left(5 c d^2+3 a e^2\right)-B \left(35 c^2 d^4+30 a c d^2 e^2+3 a^2 e^4\right)\right) (d+e x)^{4+m}-\frac{c^2 \left(35 B c d^3-15 A c d^2 e+15 a B d e^2-3 a A e^3\right) (d+e x)^{5+m}}{e^8 (5+m)}+\frac{3 c^2 \left(7 B c d^2-2 A c d e+a B e^2\right) (d+e x)^{6+m}}{e^8 (6+m)}-\frac{c^3 (7 B d-A e) (d+e x)^{7+m}}{e^8 (7+m)}+\frac{B c^3 (d+e x)^{8+m}}{e^8 (8+m)}$$

Result (type 3, 875 leaves):

$$\begin{aligned}&\frac{1}{e^8 (1+m) (2+m) (3+m) (4+m) (5+m) (6+m) (7+m) (8+m)}\\
&(d+e x)^{1+m} \Big(A e (8+m) \Big(a^3 e^6 \left(5040+8028 m+5104 m^2+1665 m^3+295 m^4+27 m^5+m^6\right)+\\
&3 a^2 c e^4 \left(840+638 m+179 m^2+22 m^3+m^4\right) \left(2 d^2-2 d e (1+m) x+e^2 \left(2+3 m+m^2\right) x^2\right)+\\
&3 a c^2 e^2 \left(42+13 m+m^2\right) \Big(24 d^4-24 d^3 e (1+m) x+12 d^2 e^2 \left(2+3 m+m^2\right) x^2-\\
&4 d e^3 \left(6+11 m+6 m^2+m^3\right) x^3+e^4 \left(24+50 m+35 m^2+10 m^3+m^4\right) x^4\Big)+\\
&c^3 \Big(720 d^6-720 d^5 e (1+m) x+360 d^4 e^2 \left(2+3 m+m^2\right) x^2-120 d^3 e^3 \left(6+11 m+6 m^2+m^3\right) x^3+\\
&30 d^2 e^4 \left(24+50 m+35 m^2+10 m^3+m^4\right) x^4-6 d e^5 \left(120+274 m+225 m^2+85 m^3+15 m^4+m^5\right)\\
&x^5+e^6 \left(720+1764 m+1624 m^2+735 m^3+175 m^4+21 m^5+m^6\right) x^6\Big)\Big)-\\
&B \Big(a^3 e^6 \left(20160+24552 m+12154 m^2+3135 m^3+445 m^4+33 m^5+m^6\right) (d-e (1+m) x)-\\
&3 a^2 c e^4 \left(1680+1066 m+251 m^2+26 m^3+m^4\right) \Big(-6 d^3+6 d^2 e (1+m) x-\\
&3 d e^2 \left(2+3 m+m^2\right) x^2+e^3 \left(6+11 m+6 m^2+m^3\right) x^3\Big)-3 a c^2 e^2 \left(56+15 m+m^2\right)\\
&\Big(-120 d^5+120 d^4 e (1+m) x-60 d^3 e^2 \left(2+3 m+m^2\right) x^2+20 d^2 e^3 \left(6+11 m+6 m^2+m^3\right) x^3-\\
&5 d e^4 \left(24+50 m+35 m^2+10 m^3+m^4\right) x^4+e^5 \left(120+274 m+225 m^2+85 m^3+15 m^4+m^5\right) x^5\Big)+\\
&c^3 \Big(5040 d^7-5040 d^6 e (1+m) x+2520 d^5 e^2 \left(2+3 m+m^2\right) x^2-840 d^4 e^3 \left(6+11 m+6 m^2+m^3\right) x^3+\\
&210 d^3 e^4 \left(24+50 m+35 m^2+10 m^3+m^4\right) x^4-42 d^2 e^5 \Big(120+274 m+225 m^2+85 m^3+\\
&15 m^4+m^5\Big) x^5+7 d e^6 \left(720+1764 m+1624 m^2+735 m^3+175 m^4+21 m^5+m^6\right) x^6-\\
&e^7 \left(5040+13068 m+13132 m^2+6769 m^3+1960 m^4+322 m^5+28 m^6+m^7\right) x^7\Big)\Big)\Big)\end{aligned}$$

Problem 1490: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 5, 202 leaves, 4 steps):

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

Result (type 5, 241 leaves):

$$\frac{1}{2 \sqrt{a}\, c\, m} (d+e x)^m \left(\left(\sqrt{a}\, B-\mathrm{i} A \sqrt{c}\right) \left(\frac{\sqrt{c}\, (d+e x)}{e \left(-\mathrm{i} \sqrt{a}+\sqrt{c}\, x\right)}\right)^{-m} \text{Hypergeometric2F1}\left[-m, -m, 1-m, \frac{\sqrt{c}\, d+\mathrm{i} \sqrt{a}\, e}{\mathrm{i} \sqrt{a}\, e-\sqrt{c}\, e x}\right] + \left(\sqrt{a}\, B+\mathrm{i} A \sqrt{c}\right) \left(\frac{\sqrt{c}\, (d+e x)}{e \left(\mathrm{i} \sqrt{a}+\sqrt{c}\, x\right)}\right)^{-m} \text{Hypergeometric2F1}\left[-m, -m, 1-m, -\frac{\sqrt{c}\, d-\mathrm{i} \sqrt{a}\, e}{\mathrm{i} \sqrt{a}\, e+\sqrt{c}\, e x}\right]\right)$$

Problem 1491: Unable to integrate problem.

$$\int \frac{(A+B x) (d+e x)^m}{\left(a+c x^2\right)^2} \, dx$$

Optimal (type 5, 361 leaves, 5 steps):

$$-\frac{(d+e x)^{1+m} \left(a (B d-A e)-(A c d+a B e) x\right)}{2 a \left(c d^2+a e^2\right) \left(a+c x^2\right)} + \left(\left(a e (A c d+a B e) m-\sqrt{-a} \sqrt{c} \left(A \left(c d^2+a e^2 (1-m)\right)+a B d e m\right)\right) (d+e x)^{1+m} \text{Hypergeometric2F1}\left[1, 1+m, 2+m, \frac{\sqrt{c}\, (d+e x)}{\sqrt{c}\, d-\sqrt{-a}\, e}\right]\right) \Big/ \left(4 a^2 \sqrt{c} \left(\sqrt{c}\, d-\sqrt{-a}\, e\right) \left(c d^2+a e^2\right) (1+m)\right) + \left(\left(a e (A c d+a B e) m+\sqrt{-a} \sqrt{c} \left(A \left(c d^2+a e^2 (1-m)\right)+a B d e m\right)\right) (d+e x)^{1+m} \text{Hypergeometric2F1}\left[1, 1+m, 2+m, \frac{\sqrt{c}\, (d+e x)}{\sqrt{c}\, d+\sqrt{-a}\, e}\right]\right) \Big/ \left(4 a^2 \sqrt{c} \left(\sqrt{c}\, d+\sqrt{-a}\, e\right) \left(c d^2+a e^2\right) (1+m)\right)$$

Result (type 8, 24 leaves):

$$\int \frac{(A+B x)\,(d+e x)^m}{\left(a+c x^2\right)^2}\,dx$$

Problem 1492: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(A+B x)\,(d+e x)^{1+m}}{a+c x^2}\,dx$$

Optimal (type 5, 202 leaves, 4 steps):

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

Result (type 5, 303 leaves):

$$\frac{1}{2\sqrt{a}\,c^{3/2}\,m}(d+e x)^m\left(\frac{2\sqrt{a}\,B\sqrt{c}\,m\,(d+e x)}{1+m}+\left(i\sqrt{a}\,B+A\sqrt{c}\right)\left(-i\sqrt{c}\,d+\sqrt{a}\,e\right)\left(\frac{\sqrt{c}\,(d+e x)}{e\left(-i\sqrt{a}+\sqrt{c}\,x\right)}\right)^{-m}\text{Hypergeometric2F1}\left[-m,\,-m,\,1-m,\,\frac{\sqrt{c}\,d+i\sqrt{a}\,e}{i\sqrt{a}\,e-\sqrt{c}\,e x}\right]+\left(-i\sqrt{a}\,B+A\sqrt{c}\right)\left(i\sqrt{c}\,d+\sqrt{a}\,e\right)\left(\frac{\sqrt{c}\,(d+e x)}{e\left(i\sqrt{a}+\sqrt{c}\,x\right)}\right)^{-m}\text{Hypergeometric2F1}\left[-m,\,-m,\,1-m,\,-\frac{\sqrt{c}\,d-i\sqrt{a}\,e}{i\sqrt{a}\,e+\sqrt{c}\,e x}\right]\right)$$

Problem 1508: Result more than twice size of optimal antiderivative.

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

Optimal (type 1, 16 leaves, 1 step):

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

Result (type 1, 36 leaves):

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

Problem 1518: Result more than twice size of optimal antiderivative.

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

Optimal (type 1, 16 leaves, 1 step):

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

Result (type 1, 51 leaves):

$$\frac{1}{4}\,x\,(b+c\,x)\,\left(4\,a^3+6\,a^2\,x\,(b+c\,x)+4\,a\,x^2\,(b+c\,x)^2+x^3\,(b+c\,x)^3\right)$$

Problem 1565: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 446 leaves, 8 steps):

$$\frac{1}{65\,536\,c^6}3\,\left(b^2-4\,a\,c\right)^3\,e\,\left(40\,c^2\,d^2+11\,b^2\,e^2-4\,c\,e\,(10\,b\,d+a\,e)\right)\,(b+2\,c\,x)\,\sqrt{a+b\,x+c\,x^2}-\frac{1}{8192\,c^5}\left(b^2-4\,a\,c\right)^2\,e\,\left(40\,c^2\,d^2+11\,b^2\,e^2-4\,c\,e\,(10\,b\,d+a\,e)\right)\,(b+2\,c\,x)\,\left(a+b\,x+c\,x^2\right)^{3/2}+\frac{1}{2560\,c^4}\left(b^2-4\,a\,c\right)\,e\,\left(40\,c^2\,d^2+11\,b^2\,e^2-4\,c\,e\,(10\,b\,d+a\,e)\right)\,(b+2\,c\,x)\,\left(a+b\,x+c\,x^2\right)^{5/2}+\frac{(2\,c\,d-b\,e)\,(d+e\,x)^2\,\left(a+b\,x+c\,x^2\right)^{7/2}}{30\,c}+\frac{1}{5}\,(d+e\,x)^3\,\left(a+b\,x+c\,x^2\right)^{7/2}+\frac{1}{6720\,c^3}\left(128\,c^3\,d^3-99\,b^3\,e^3+4\,b\,c\,e^2\,(90\,b\,d+97\,a\,e)-8\,c^2\,d\,e\,(17\,b\,d+160\,a\,e)+14\,c\,e\,\left(8\,c^2\,d^2+11\,b^2\,e^2-4\,c\,e\,(2\,b\,d+9\,a\,e)\right)\,x\right)\,\left(a+b\,x+c\,x^2\right)^{7/2}-\frac{1}{131\,072\,c^{13/2}}3\,\left(b^2-4\,a\,c\right)^4\,e\,\left(40\,c^2\,d^2+11\,b^2\,e^2-4\,c\,e\,(10\,b\,d+a\,e)\right)\,\text{ArcTanh}\left[\frac{b+2\,c\,x}{2\,\sqrt{c}\,\sqrt{a+b\,x+c\,x^2}}\right]$$

Result (type 3, 927 leaves):

$$\frac{1}{13\,762\,560\,c^{13/2}}\left(2\sqrt{c}\,\sqrt{a+x\,(b+c\,x)}\right.$$
$$\left(3465\,b^9\,e^3-210\,b^8\,c\,e^2\,(60\,d+11\,e\,x)-640\,b^4\,c^5\,e\,x^3\,(9\,d^2+8\,d\,e\,x+2\,e^2\,x^2)+\right.$$
$$168\,b^7\,c^2\,e\,(75\,d^2+50\,d\,e\,x+11\,e^2\,x^2)+64\,b^5\,c^4\,e\,x^2\,(105\,d^2+90\,d\,e\,x+22\,e^2\,x^2)-48\,b^6\,c^3\,e$$
$$x\,(175\,d^2+140\,d\,e\,x+33\,e^2\,x^2)+16\,384\,c^9\,x^6\,(120\,d^3+315\,d^2\,e\,x+280\,d\,e^2\,x^2+84\,e^3\,x^3)+$$
$$5120\,b^3\,c^6\,x^3\,(384\,d^3+897\,d^2\,e\,x+734\,d\,e^2\,x^2+207\,e^3\,x^3)+$$
$$8192\,b\,c^8\,x^5\,(720\,d^3+1845\,d^2\,e\,x+1610\,d\,e^2\,x^2+476\,e^3\,x^3)+$$
$$2048\,b^2\,c^7\,x^4\,(2880\,d^3+7125\,d^2\,e\,x+6060\,d\,e^2\,x^2+1757\,e^3\,x^3)-$$
$$1280\,a^4\,c^4\,e^2\,(-449\,b\,e+2\,c\,(512\,d+63\,e\,x))+1280\,a^3\,c^3\,\big(-537\,b^3\,e^3+62\,b^2\,c\,e^2\,(27\,d+4\,e\,x)-$$
$$2\,b\,c^2\,e\,(837\,d^2+374\,d\,e\,x+65\,e^2\,x^2)+4\,c^3\,(384\,d^3+315\,d^2\,e\,x+128\,d\,e^2\,x^2+21\,e^3\,x^3)\big)+96$$
$$a^2\,c^2\,\big(3003\,b^5\,e^3-10\,b^4\,c\,e^2\,(1022\,d+167\,e\,x)-40\,b^2\,c^3\,e\,x\,(141\,d^2+92\,d\,e\,x+19\,e^2\,x^2)+20\,b^3$$
$$c^2\,e\,(511\,d^2+282\,d\,e\,x+55\,e^2\,x^2)+160\,b\,c^4\,x\,(384\,d^3+663\,d^2\,e\,x+454\,d\,e^2\,x^2+114\,e^3\,x^3)+$$
$$64\,c^5\,x^2\,(960\,d^3+2065\,d^2\,e\,x+1600\,d\,e^2\,x^2+434\,e^3\,x^3)\big)+$$
$$16\,a\,c\,\big(-3255\,b^7\,e^3+42\,b^6\,c\,e^2\,(275\,d+48\,e\,x)-160\,b^3\,c^4\,e\,x^2\,(33\,d^2+26\,d\,e\,x+6\,e^2\,x^2)+$$
$$20\,b^4\,c^3\,e\,x\,(357\,d^2+264\,d\,e\,x+59\,e^2\,x^2)-6\,b^5\,c^2\,e\,(1925\,d^2+1190\,d\,e\,x+249\,e^2\,x^2)+$$
$$960\,b^2\,c^5\,x^2\,(384\,d^3+815\,d^2\,e\,x+628\,d\,e^2\,x^2+170\,e^3\,x^3)+$$
$$512\,c^7\,x^4\,(720\,d^3+1785\,d^2\,e\,x+1520\,d\,e^2\,x^2+441\,e^3\,x^3)+$$
$$\left.256\,b\,c^6\,x^3\,(2880\,d^3+6765\,d^2\,e\,x+5550\,d\,e^2\,x^2+1567\,e^3\,x^3)\big)\right)-$$
$$315\,(b^2-4\,a\,c)^4\,e\,(40\,c^2\,d^2+11\,b^2\,e^2-4\,c\,e\,(10\,b\,d+a\,e))$$
$$\left.\mathrm{Log}\left[b+2\,c\,x+2\sqrt{c}\,\sqrt{a+x\,(b+c\,x)}\right]\right)$$

Problem 1566: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 289 leaves, 7 steps):

$$\frac{5\,(b^2-4\,a\,c)^3\,e\,(2\,c\,d-b\,e)\,(b+2\,c\,x)\,\sqrt{a+b\,x+c\,x^2}}{8192\,c^5}-$$
$$\frac{5\,(b^2-4\,a\,c)^2\,e\,(2\,c\,d-b\,e)\,(b+2\,c\,x)\,(a+b\,x+c\,x^2)^{3/2}}{3072\,c^4}+$$
$$\frac{(b^2-4\,a\,c)\,e\,(2\,c\,d-b\,e)\,(b+2\,c\,x)\,(a+b\,x+c\,x^2)^{5/2}}{192\,c^3}+\frac{2}{9}\,(d+e\,x)^2\,(a+b\,x+c\,x^2)^{7/2}+$$
$$\frac{1}{504\,c^2}\left(32\,c^2\,d^2+9\,b^2\,e^2-2\,c\,e\,(9\,b\,d+16\,a\,e)+14\,c\,e\,(2\,c\,d-b\,e)\,x\right)(a+b\,x+c\,x^2)^{7/2}-$$
$$\frac{5\,(b^2-4\,a\,c)^4\,e\,(2\,c\,d-b\,e)\,\mathrm{ArcTanh}\left[\frac{b+2\,c\,x}{2\sqrt{c}\,\sqrt{a+b\,x+c\,x^2}}\right]}{16\,384\,c^{11/2}}$$

Result (type 3, 593 leaves):

$$\frac{1}{1032192\, c^{11/2}} \Big(2\sqrt{c}\,\sqrt{a+x\,(b+c\,x)}\,\big(-315\,b^8\,e^2-32768\,a^4\,c^4\,e^2+210\,b^7\,c\,e\,(3\,d+e\,x)-84\,b^6\,c^2\,e\,x\,(5\,d+2\,e\,x)+48\,b^5\,c^3\,e\,x^2\,(7\,d+3\,e\,x)-32\,b^4\,c^4\,e\,x^3\,(9\,d+4\,e\,x)+4096\,c^8\,x^6\,(36\,d^2+63\,d\,e\,x+28\,e^2\,x^2)+2048\,b\,c^7\,x^5\,(216\,d^2+369\,d\,e\,x+161\,e^2\,x^2)+1536\,b^2\,c^6\,x^4\,(288\,d^2+475\,d\,e\,x+202\,e^2\,x^2)+256\,b^3\,c^5\,x^3\,(576\,d^2+897\,d\,e\,x+367\,e^2\,x^2)+64\,a^3\,c^3\,(837\,b^2\,e^2-2\,b\,c\,e\,(837\,d+187\,e\,x)+4\,c^2\,(576\,d^2+315\,d\,e\,x+64\,e^2\,x^2))+48\,a^2\,c^2\,(-511\,b^4\,e^2-4\,b^2\,c^2\,e\,x\,(141\,d+46\,e\,x)+2\,b^3\,c\,e\,(511\,d+141\,e\,x)+32\,c^4\,x^2\,(288\,d^2+413\,d\,e\,x+160\,e^2\,x^2)+16\,b\,c^3\,x\,(576\,d^2+663\,d\,e\,x+227\,e^2\,x^2))+4\,a\,c\,(1155\,b^6\,e^2-32\,b^3\,c^3\,e\,x^2\,(33\,d+13\,e\,x)-42\,b^5\,c\,e\,(55\,d+17\,e\,x)+12\,b^4\,c^2\,e\,x\,(119\,d+44\,e\,x)+512\,c^6\,x^4\,(216\,d^2+357\,d\,e\,x+152\,e^2\,x^2)+768\,b\,c^5\,x^3\,(288\,d^2+451\,d\,e\,x+185\,e^2\,x^2)+192\,b^2\,c^4\,x^2\,(576\,d^2+815\,d\,e\,x+314\,e^2\,x^2))\big)+315\,(b^2-4\,a\,c)^4\,e\,(-2\,c\,d+b\,e)\,\mathrm{Log}\big[b+2\,c\,x+2\sqrt{c}\,\sqrt{a+x\,(b+c\,x)}\big]\Big)$$

Problem 1628: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 576 leaves, 7 steps):

$$-\frac{1}{105\,c\,e^2}2\,\sqrt{d+e\,x}\,\left(8\,c^2\,d^2+b^2\,e^2-c\,e\,(11\,b\,d-10\,a\,e)-3\,c\,e\,(2\,c\,d-b\,e)\,x\right)\,\sqrt{a+b\,x+c\,x^2}\,+$$

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

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

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

$$\left(105\,c^2\,e^3\,\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{a+b\,x+c\,x^2}\right)-$$

$$\left(2\,\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\left(16\,c^2\,d^2-b^2\,e^2-4\,c\,e\,(4\,b\,d-5\,a\,e)\right)\right.$$

$$\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],\right.$$

$$\left.\left.-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/\left(105\,c^2\,e^3\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 5323 leaves) :

$$\sqrt{d+e\,x}\,\left(-\frac{2\,\left(8\,c^2\,d^2-11\,b\,c\,d\,e+b^2\,e^2-20\,a\,c\,e^2\right)}{105\,c\,e^2}+\frac{2\,(2\,c\,d+9\,b\,e)\,x}{35\,e}+\frac{4\,c\,x^2}{7}\right)\,\sqrt{a+x\,(b+c\,x)}\,+$$

$$\frac{1}{105\,c\,e^4\sqrt{a+b\,x+c\,x^2}}$$

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

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

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

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

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

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

$$\Bigg(\text{EllipticE}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-$$

$$\text{EllipticF}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],$$

$$\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Bigg)\Bigg)\Bigg/\Bigg(\left(c\,d^2-b\,d\,e+a\,e^2\right)$$

$$\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\;\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\;\Bigg)-\Bigg(6\,\mathrm{i}\,\sqrt{2}$$

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

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

$$\Bigg(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\Bigg)\Bigg)\Bigg/\Bigg(\left(c\,d^2-b\,d\,e+a\,e^2\right)$$

$$\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\;\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\;\Bigg)+\Bigg(\mathrm{i}\,\sqrt{2}$$

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

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

$$\Bigg(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)+\Bigg(8\,\mathbb{i}\,\sqrt{2}$$

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

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

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

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

$$\Bigg(\mathbb{i}\,b^3\,e^3\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\left(d+e\,x\right)}}$$

$$\sqrt{1-\frac{2\,(c\,d^2-b\,d\,e+a\,e^2)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\;\Big(\text{EllipticE}\Big[\mathbb{i}\,\text{ArcSinh}\Big[$$

$$\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\;\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-\text{EllipticF}\Big[\mathbb{i}$$

$$\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\;\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Big)\Big)\Big/$$

$$\Big(\sqrt{2}\,(c\,d^2-b\,d\,e+a\,e^2)\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}$$

$$\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Big)-\Big(4\,\mathbb{i}\,\sqrt{2}\,a\,b\,c\,e^3$$

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

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

$$\Big(\text{EllipticE}\Big[\mathbb{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\;\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-$$

$$\text{EllipticF}\Big[\mathbb{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],$$

$$\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Big)\Big)\Big/\Big((c\,d^2-b\,d\,e+a\,e^2)$$

$$\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\;\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)+$$

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

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

$$\text{EllipticF}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\;\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)-$$

$$\Bigg(8\,\mathrm{i}\,\sqrt{2}\,b\,c^2\,d\,e\,\sqrt{1-\frac{2\,(c\,d^2-b\,d\,e+a\,e^2)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}$$

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

$$\text{EllipticF}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Bigg)\Bigg/$$

$$\Bigg(\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\;\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)-$$

$$\Bigg(\mathrm{i}\,b^2\,c\,e^2\,\sqrt{1-\frac{2\,(c\,d^2-b\,d\,e+a\,e^2)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}$$

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

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Bigg/$$

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

$$\left(10\,\mathrm{i}\,\sqrt{2}\,a\,c^2\,e^2\,\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}\right.$$

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

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Bigg/$$

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

Problem 1629: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 487 leaves, 6 steps):

$$-\frac{2\sqrt{d+e\,x}\,\left(8\,c\,d-7\,b\,e-6\,c\,e\,x\right)\sqrt{a+b\,x+c\,x^2}}{15\,e^2}+$$

$$\left(\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,\left(16\,c^2\,d^2+b^2\,e^2-4\,c\,e\,\left(4\,b\,d-3\,a\,e\right)\right)\sqrt{d+e\,x}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

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

$$\left(15\,c\,e^3\sqrt{\frac{c\,\left(d+e\,x\right)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}}\,\sqrt{a+b\,x+c\,x^2}\right)-$$

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

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

$$\left(15\,c\,e^3\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 3387 leaves):

$$\left(\frac{2\left(-8\,c\,d+7\,b\,e\right)}{15\,e^2}+\frac{4\,c\,x}{5\,e}\right)\sqrt{d+e\,x}\,\sqrt{a+x\,\left(b+c\,x\right)}+$$

$$\frac{1}{15\,e^4\sqrt{a+b\,x+c\,x^2}}\sqrt{a+x\,\left(b+c\,x\right)}\,\left(\left(2\,\left(16\,c^2\,d^2-16\,b\,c\,d\,e+b^2\,e^2+12\,a\,c\,e^2\right)\right.\right.$$

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

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

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

$$\Bigg(\Bigg(4 \mathbb{i} \sqrt{2}\, c^2 d^2 \left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right) \sqrt{1-\frac{2 \left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right) (d+e x)}}$$

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

$$\Bigg(\text{EllipticE}\Bigg[\mathbb{i} \text{ArcSinh}\Bigg[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\Bigg], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\Bigg]-$$

$$\text{EllipticF}\Bigg[\mathbb{i} \text{ArcSinh}\Bigg[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\Bigg],$$

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

$$\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}} \sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\Bigg)-\Bigg(4 \mathbb{i} \sqrt{2}$$

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

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

$$\left(\text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/\left(\left(c d^2-b d e+a e^2\right)\right.$$

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

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

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\left(\text{EllipticE}\left[i \text{ArcSinh}\left[\right.\right.\right.$$

$$\left.\left.\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\text{EllipticF}\left[i\right.$$

$$\left.\left.\left.\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/$$

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

$$\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\Bigg)+\Bigg(3 i \sqrt{2}\, a c e^2$$

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

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

$$\Bigg(\text{EllipticE}\left[i \,\text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-$$

$$\text{EllipticF}\left[i \,\text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\Bigg)\Bigg) \Big/ \Bigg(\left(c d^2-b d e+a e^2\right)$$

$$\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}} \sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\Bigg)+$$

$$\Bigg(8 i \sqrt{2}\, c^2 d \sqrt{1-\frac{2 \left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right) (d+e x)}}$$

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

$$\text{EllipticF}\left[i \,\text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\Bigg) \Big/$$

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

$$\left(4\,\mathrm{i}\,\sqrt{2}\,b\,c\,e\,\sqrt{1-\frac{2\,(c\,d^2-b\,d\,e+a\,e^2)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\right.$$

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

$$\left.\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Bigg/$$

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

Problem 1630: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 469 leaves, 6 steps):

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

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

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

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

$$\left(2\sqrt{2}\sqrt{b^2-4 a c}\left(16 c^2 d^2+3 b^2 e^2-4 c e\left(4 b d-a e\right)\right)\sqrt{\frac{c\left(d+e x\right)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right)e}}\right.$$

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

$$\left(3 c e^3\sqrt{d+e x}\sqrt{a+b x+c x^2}\right)$$

Result (type 4, 5706 leaves):

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

$$\left(\left(8\left(2 c d-b e\right)\left(d+e x\right)^{3/2}\left(c+\frac{c d^2}{\left(d+e x\right)^2}-\frac{b d e}{\left(d+e x\right)^2}+\frac{a e^2}{\left(d+e x\right)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}\right)\right)\Big/\right.$$

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

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

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

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

$$\left(\text{EllipticE}\left[i \,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\left.\left.\text{EllipticF}\left[i \,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/$$

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

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

$$\left(6 i \sqrt{2}\, b c d^2 e\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[\text{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\left.\left.\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/$$

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

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

$$\left(2\,\text{i}\,\sqrt{2}\,b^2\,d\,e^2\,\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\left.\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/$$

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

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

$$\left(4\,i\sqrt{2}\,a c d e^2\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\left.\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/$$

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

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

$$\left(2\,i\sqrt{2}\,a b e^3\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\Bigg)\Bigg)\Bigg/$$

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

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

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

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

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

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Bigg/$$

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

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

$$\left(8\,\mathbb{i}\,\sqrt{2}\;b\,c\,d\,e\,(d+e\,x)\,\sqrt{c+\frac{c\,d^2}{(d+e\,x)^2}-\frac{b\,d\,e}{(d+e\,x)^2}+\frac{a\,e^2}{(d+e\,x)^2}-\frac{2\,c\,d}{d+e\,x}+\frac{b\,e}{d+e\,x}}\right.$$

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

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

$$\left.\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Big/$$

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

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

$$\left(3\,\mathbb{i}\,b^2\,e^2\,(d+e\,x)\,\sqrt{c+\frac{c\,d^2}{(d+e\,x)^2}-\frac{b\,d\,e}{(d+e\,x)^2}+\frac{a\,e^2}{(d+e\,x)^2}-\frac{2\,c\,d}{d+e\,x}+\frac{b\,e}{d+e\,x}}\right.$$

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

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

$$\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\Bigg/$$

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

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

$$\left(2\,\text{i}\sqrt{2}\,a c e^2(d+e x)\sqrt{c+\frac{c d^2}{(d+e x)^2}-\frac{b d e}{(d+e x)^2}+\frac{a e^2}{(d+e x)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}}\right.$$

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

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

$$\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\Bigg/$$

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

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

Problem 1631: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 548 leaves, 6 steps):

$$-\left(\left(2\,\left(8\,c^2\,d^3+a\,b\,e^3-c\,d\,e\,(7\,b\,d-4\,a\,e)+e\,\left(10\,c^2\,d^2+b^2\,e^2-2\,c\,e\,(5\,b\,d-3\,a\,e)\right)\,x\right)\,\sqrt{a+b\,x+c\,x^2}\right)\Big/\left(3\,e^2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,(d+e\,x)^{3/2}\right)\right)+$$

$$\left(\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,\left(16\,c^2\,d^2+b^2\,e^2-4\,c\,e\,(4\,b\,d-3\,a\,e)\right)\,\sqrt{d+e\,x}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

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

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

$$\left(16\,\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,(2\,c\,d-b\,e)\,\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\,\text{EllipticF}\left[\right.\right.$$

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

Result (type 4, 3463 leaves):

$$\sqrt{d+e x}\,\sqrt{a+x\,(b+c x)}\,\left(-\frac{2\,(-2 c d+b e)}{3 e^2\,(d+e x)^2}-\frac{2\,\left(10 c^2 d^2-10 b c d e+b^2 e^2+6 a c e^2\right)}{3 e^2\,\left(c d^2-b d e+a e^2\right)\,(d+e x)}\right)-$$

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

$$2 c\,\sqrt{a+x\,(b+c x)}\,\left(\left(\left(-16 c^2 d^2+16 b c d e-b^2 e^2-12 a c e^2\right)\,(d+e x)^{3/2}\right.\right.$$

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

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

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

$$\left(\left(4\,\mathrm{i}\,\sqrt{2}\,c^2 d^2\,\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\,\sqrt{1-\frac{2\,\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)\,(d+e x)}}\right.\right.$$

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

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\,\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\;\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-\left(4\,\mathrm{i}\,\sqrt{2}\right.$$

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

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

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

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

$$\left(\mathrm{i}\,b^2\,e^2\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\;\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\right.\right.\right.$$

$$\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-\text{EllipticF}\Big[\mathrm{i}$$

$$\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Bigg)\Bigg)\Big/$$

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

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

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

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

$$\Bigg(\text{EllipticE}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-$$

$$\text{EllipticF}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],$$

$$\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Bigg)\Bigg)\Big/\Bigg(\left(c\,d^2-b\,d\,e+a\,e^2\right)$$

$$\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\ \sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)+$$

$$\left(8\,i\,\sqrt{2}\,c^2\,d\,\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

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

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Bigg/$$

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

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

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

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Bigg/$$

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

Problem 1632: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 691 leaves, 7 steps):

$$\frac{4\,(2\,c\,d-b\,e)\,\left(4\,c^2\,d^2-b^2\,e^2-4\,c\,e\,(b\,d-2\,a\,e)\right)\sqrt{a+b\,x+c\,x^2}}{15\,e^2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)^2\sqrt{d+e\,x}}-$$

$$\left(2\,\left(8\,c^2\,d^3-c\,d\,e\,(5\,b\,d-4\,a\,e)-b\,e^2\,(2\,b\,d-3\,a\,e)+e\,\left(14\,c^2\,d^2+b^2\,e^2-2\,c\,e\,(7\,b\,d-5\,a\,e)\right)\,x\right)\sqrt{a+b\,x+c\,x^2}\right)\Big/\left(15\,e^2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,(d+e\,x)^{5/2}\right)-$$

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

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

$$\left(15\,e^3\,\left(c\,d^2-b\,d\,e+a\,e^2\right)^2\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{a+b\,x+c\,x^2}\right)+$$

$$\left(2\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,\left(16\,c^2\,d^2-b^2\,e^2-4\,c\,e\,(4\,b\,d-5\,a\,e)\right)\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\right.$$

$$\left.\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],\,-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/$$

$$\left(15\,e^3\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 5427 leaves):

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

$$\left.\frac{2\left(14 c^2 d^2-14 b c d e+b^2 e^2+10 a c e^2\right)}{15 e^2\left(c d^2-b d e+a e^2\right)(d+e x)^2}-\frac{4(-2 c d+b e)\left(4 c^2 d^2-4 b c d e-b^2 e^2+8 a c e^2\right)}{15 e^2\left(c d^2-b d e+a e^2\right)^2(d+e x)}\right)+$$

$$\frac{1}{15 e^4\left(c d^2-b d e+a e^2\right)^2 \sqrt{a+b x+c x^2}} 2 c \sqrt{a+x(b+c x)}$$

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

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

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

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

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

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

$$\left(\text{EllipticE}\left[i \operatorname{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[i \operatorname{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+\left(\mathrm{i}\,\sqrt{2}\right.$$

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

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

$$\left(\text{EllipticE}\left[\text{i ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\text{i ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/\left(\left(c d^2-b d e+a e^2\right)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[\text{i ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\text{i ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/\left(\left(c d^2-b d e+a e^2\right)\right.$$

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

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

$$\sqrt{1 - \frac{2 \left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right) (d + e x)}} \left(\text{EllipticE}\left[\mathbb{i}\, \text{ArcSinh}\left[\right.\right.\right.$$

$$\left.\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right] - \text{EllipticF}\left[\mathbb{i}\right.$$

$$\left.\left.\left.\text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right]\right)\right) \Big/$$

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

$$\left.\sqrt{c + \frac{c d^2 - b d e + a e^2}{(d + e x)^2} + \frac{-2 c d + b e}{d + e x}}\right) - \left(4\, \mathbb{i} \sqrt{2}\, a b c e^3\right.$$

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

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

$$\left(\text{EllipticE}\left[\mathbb{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right] - \right.$$

$$\text{EllipticF}\left[\mathbb{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right) \Big/ \left(\left(c d^2-b d e+a e^2\right)\right.$$

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

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

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

$$\left.\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Big/$$

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

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

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

$$\left.\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Big/$$

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

$$\left(\mathrm{i}\, b^2 c\, e^2 \sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

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

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Bigg/$$

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

$$\left(10\,\mathrm{i}\sqrt{2}\, a c^2 e^2 \sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

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

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Bigg/$$

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

Problem 1633: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 688 leaves, 7 steps) :

$$-\frac{1}{315\,c\,e^4}2\sqrt{d+e\,x}\,\left(128\,c^3\,d^3-b^3\,e^3+3\,b\,c\,e^2\,(37\,b\,d-36\,a\,e)-12\,c^2\,d\,e\,(20\,b\,d-11\,a\,e)-3\,c\,e\,\left(32\,c^2\,d^2+b^2\,e^2-4\,c\,e\,(8\,b\,d-7\,a\,e)\right)\,x\right)\sqrt{a+b\,x+c\,x^2}-$$

$$\frac{2\sqrt{d+e\,x}\,(16\,c\,d-15\,b\,e-14\,c\,e\,x)\,\left(a+b\,x+c\,x^2\right)^{3/2}}{63\,e^2}+$$

$$\left(2\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,\left(128\,c^4\,d^4-b^4\,e^4-4\,c^3\,d^2\,e\,(64\,b\,d-57\,a\,e)-b^2\,c\,e^3\,(7\,b\,d-15\,a\,e)+3\,c^2\,e^2\,\left(45\,b^2\,d^2-76\,a\,b\,d\,e+28\,a^2\,e^2\right)\right)\sqrt{d+e\,x}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

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

$$\left(315\,c^2\,e^5\,\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}}\,\sqrt{a+b\,x+c\,x^2}\right)-$$

$$\left(2\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,(2\,c\,d-b\,e)\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\left(128\,c^2\,d^2-b^2\,e^2-4\,c\,e\,(32\,b\,d-33\,a\,e)\right)\right.$$

$$\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],\right.$$

$$\left.\left.-\frac{2\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}\right]\right)\Bigg/\left(315\,c^2\,e^5\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 7917 leaves) :

$$\frac{1}{a+b x+c x^2}\sqrt{d+e x}\left(-\frac{1}{315 c e^4}2\left(128 c^3 d^3-240 b c^2 d^2 e+111 b^2 c d e^2+212 a c^2 d e^2-b^3 e^3-183 a b c e^3\right)+\frac{4\left(48 c^2 d^2-88 b c d e+39 b^2 e^2+77 a c e^2\right) x}{315 e^3}-\frac{2 c\left(16 c d-29 b e\right) x^2}{63 e^2}+\frac{4 c^2 x^3}{9 e}\right)$$

$$\left(a+x\left(b+c x\right)\right)^{3/2}-\frac{1}{315 c e^6\left(a+b x+c x^2\right)^{3/2}}$$

$$2\left(a+x\left(b+c x\right)\right)^{3/2}\left(-\left(\left(2\left(128 c^4 d^4-256 b c^3 d^3 e+135 b^2 c^2 d^2 e^2+\right.\right.\right.\right.$$

$$\left.228 a c^3 d^2 e^2-7 b^3 c d e^3-228 a b c^2 d e^3-b^4 e^4+15 a b^2 c e^4+84 a^2 c^2 e^4\right)$$

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

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

$$\left(c d^2-b d e+a e^2\right)\left(d+e x\right)\sqrt{c+\frac{c d^2}{\left(d+e x\right)^2}-\frac{b d e}{\left(d+e x\right)^2}+\frac{a e^2}{\left(d+e x\right)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}}\left(\left(64 i\right.\right.$$

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

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\left(d+e x\right)}}\left(\text{EllipticE}\left[i \text{ArcSinh}\left[\right.\right.\right.$$

$$\left.\left.\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\text{EllipticF}\left[i\right.$$

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

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

$$\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)-\Bigg(128\,\mathrm{i}\,\sqrt{2}\,b\,c^3\,d^3\,e$$

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

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

$$\Bigg(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\Bigg)\Bigg)\Bigg/\Bigg(\left(c\,d^2-b\,d\,e+a\,e^2\right)$$

$$\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\ \sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)+\Bigg(135\,\mathrm{i}\,b^2$$

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

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

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

$$\left.\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+\left(114\,\mathbb{i}\sqrt{2}\,a c^3 d^2 e^2\right.$$

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

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

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/\left(\left(c d^2-b d e+a e^2\right)\right.$$

$$\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\;\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)-$$

$$\Bigg(7\,\mathrm{i}\,b^3\,c\,d\,e^3\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\,(c\,d^2-b\,d\,e+a\,e^2)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}$$

$$\sqrt{1-\frac{2\,(c\,d^2-b\,d\,e+a\,e^2)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\;\Bigg(\mathrm{EllipticE}\Big[\mathrm{i}\,\mathrm{ArcSinh}\Big[$$

$$\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\;\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-\mathrm{EllipticF}\Big[\mathrm{i}$$

$$\mathrm{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\;\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Bigg)\Bigg)\Big/$$

$$\Bigg(\sqrt{2}\,(c\,d^2-b\,d\,e+a\,e^2)\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}$$

$$\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)-\Bigg(114\,\mathrm{i}\,\sqrt{2}\,a\,b\,c^2\,d\,e^3$$

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

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

$$\Bigg(\mathrm{EllipticE}\Big[\mathrm{i}\,\mathrm{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\;\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-$$

$$\text{EllipticF}\left[\text{i ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right) \Bigg/ \left(\left(c d^2-b d e+a e^2\right)\right.$$

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

$$\left(\text{i}\, b^4 e^4\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\left(\text{EllipticE}\left[\text{i ArcSinh}\left[\right.\right.\right.$$

$$\left.\left.\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\text{EllipticF}\left[\text{i}\right.$$

$$\left.\left.\left.\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right) \Bigg/$$

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

$$\left.\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+\left(15\, \text{i}\, a b^2 c e^4\right.$$

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

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\left(\text{EllipticE}\left[i \text{ArcSinh}\left[\right.\right.\right.$$

$$\left.\left.\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\text{EllipticF}\left[i\right.$$

$$\left.\left.\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/$$

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

$$\left.\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+\left(42\, i \sqrt{2}\, a^2 c^2 e^4\right.$$

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

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

$$\left(\text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/\left(\left(c d^2-b d e+a e^2\right)\right.$$

$$\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}} \sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\Bigg)+$$

$$\Bigg(128 i \sqrt{2} c^4 d^3 \sqrt{1-\frac{2 \left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right) (d+e x)}}$$

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

$$\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\Bigg) \Big/$$

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

$$\Bigg(192 i \sqrt{2} b c^3 d^2 e \sqrt{1-\frac{2 \left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right) (d+e x)}}$$

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

$$\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\Bigg) \Big/$$

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

$$\Bigg(63 i \sqrt{2} b^2 c^2 d e^2 \sqrt{1-\frac{2 \left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right) (d+e x)}}$$

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

$$\left.\text{EllipticF}\left[\text{i} \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Big/$$

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

$$\left(132 \text{i} \sqrt{2} a c^3 d e^2 \sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

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

$$\left.\text{EllipticF}\left[\text{i} \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Big/$$

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

$$\left(\text{i} b^3 c e^3 \sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

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

$$\left.\text{EllipticF}\left[\text{i} \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Big/$$

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

$$\left(66\,\mathrm{i}\,\sqrt{2}\,a\,b\,c^2\,e^3\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}\right.$$

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

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Big/$$

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

Problem 1634: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 592 leaves, 7 steps):

$$\frac{1}{35 e^4} 2 \sqrt{d+e x} \left(128 c^2 d^2+51 b^2 e^2-4 c e (44 b d-5 a e)-48 c e (2 c d-b e) x\right) \sqrt{a+b x+c x^2}+$$

$$\frac{2 (16 c d-7 b e+2 c e x) \left(a+b x+c x^2\right)^{3/2}}{7 e^2 \sqrt{d+e x}}-$$

$$\left(\sqrt{2} \sqrt{b^2-4 a c} (2 c d-b e) \left(128 c^2 d^2+3 b^2 e^2-4 c e (32 b d-29 a e)\right) \sqrt{d+e x}\right.$$

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

$$\left(35 c e^5 \sqrt{\frac{c (d+e x)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}} \sqrt{a+b x+c x^2}\right)+$$

$$\left(4 \sqrt{2} \sqrt{b^2-4 a c} \left(c d^2-b d e+a e^2\right) \left(128 c^2 d^2+27 b^2 e^2-4 c e (32 b d-5 a e)\right)\right.$$

$$\sqrt{\frac{c (d+e x)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}} \sqrt{-\frac{c \left(a+b x+c x^2\right)}{b^2-4 a c}} \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4 a c}+2 c x}{\sqrt{b^2-4 a c}}}}{\sqrt{2}}\right],\right.$$

$$\left.\left.-\frac{2 \sqrt{b^2-4 a c} e}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}\right]\right) \Bigg/ \left(35 c e^5 \sqrt{d+e x} \sqrt{a+b x+c x^2}\right)$$

Result (type 4, 5373 leaves) :

$$\frac{1}{a+b x+c x^2}$$

$$\sqrt{d+e x}\,\left(a+x\,(b+c x)\right)^{3/2}\left(\frac{2\left(58 c^2 d^2-71 b c d e+16 b^2 e^2+30 a c e^2\right)}{35 e^4}-\frac{2 c\,(26 c d-23 b e)\,x}{35 e^3}+\frac{4 c^2 x^2}{7 e^2}-\frac{2\,(-2 c d+b e)\left(c d^2-b d e+a e^2\right)}{e^4\,(d+e x)}\right)-\frac{1}{35 e^6\left(a+b x+c x^2\right)^{3/2}}$$

$$2\,\left(a+x\,(b+c x)\right)^{3/2}\left(\left((2 c d-b e)\left(128 c^2 d^2-128 b c d e+3 b^2 e^2+116 a c e^2\right)\right.\right.$$

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

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

$$\left(c d^2-b d e+a e^2\right)\,(d+e x)\,\sqrt{c+\frac{c d^2}{(d+e x)^2}-\frac{b d e}{(d+e x)^2}+\frac{a e^2}{(d+e x)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}}\,\left(\left(64\,\mathrm{i}\right.\right.$$

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

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

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Bigg]\Bigg)\Bigg)\Bigg/\Bigg(\left(c\,d^2-b\,d\,e+a\,e^2\right)$$

$$\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\;\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)-\Bigg(96\,\mathrm{i}\,\sqrt{2}$$

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

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

$$\Bigg(\text{EllipticE}\Bigg[\mathrm{i}\,\text{ArcSinh}\Bigg[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Bigg],\;\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Bigg]-$$

$$\text{EllipticF}\Bigg[\mathrm{i}\,\text{ArcSinh}\Bigg[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Bigg],$$

$$\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Bigg]\Bigg)\Bigg)\Bigg/\Bigg(\left(c\,d^2-b\,d\,e+a\,e^2\right)$$

$$\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\;\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)+\Bigg(67\,\mathrm{i}$$

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

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\;\Bigg(\text{EllipticE}\Bigg[\mathrm{i}\,\text{ArcSinh}\Bigg[$$

$$\left.\left.\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\text{EllipticF}\left[i\right.$$

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

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

$$\left.\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+\left(58\, i\sqrt{2}\, a c^2 d e^2\right.$$

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

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

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/\left(\left(c d^2-b d e+a e^2\right)\right.$$

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

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

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}\,\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\right.\right.\right.$$

$$\left.\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-\text{EllipticF}\Big[\mathrm{i}$$

$$\left.\left.\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/$$

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

$$\left.\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-\left(29\,\mathrm{i}\,\sqrt{2}\,a\,b\,c\,e^3\right.$$

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

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

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right]\right)\right) \Bigg/ \left(\left(c d^2 - b d e + a e^2\right)\right.$$

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

$$\left(128 \, \mathrm{i} \sqrt{2} \, c^3 d^2 \sqrt{1 - \frac{2 \left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}\right) (d + e x)}}\right.$$

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

$$\left.\text{EllipticF}\left[\mathrm{i} \, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right]\right) \Bigg/$$

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

$$\left(128 \, \mathrm{i} \sqrt{2} \, b c^2 d e \sqrt{1 - \frac{2 \left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}\right) (d + e x)}}\right.$$

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

$$\left.\text{EllipticF}\left[\mathrm{i} \, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right]\right) \Bigg/$$

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

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

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

$$\left.\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Big/$$

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

$$\left(20\, i \sqrt{2}\, a c^2 e^2 \sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

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

$$\left.\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Big/$$

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

Problem 1635: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 573 leaves, 7 steps):

$$-\frac{1}{15 e^4 \sqrt{d+e x}} 2 \left(128 c^2 d^2+15 b^2 e^2-4 c e (28 b d-9 a e)+16 c e (2 c d-b e) x\right) \sqrt{a+b x+c x^2}+\frac{2 (16 c d-5 b e+6 c e x) \left(a+b x+c x^2\right)^{3/2}}{15 e^2 (d+e x)^{3/2}}+\left(2 \sqrt{2} \sqrt{b^2-4 a c} \left(128 c^2 d^2+23 b^2 e^2-4 c e (32 b d-9 a e)\right) \sqrt{d+e x} \sqrt{-\frac{c \left(a+b x+c x^2\right)}{b^2-4 a c}} \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4 a c}+2 c x}{\sqrt{b^2-4 a c}}}}{\sqrt{2}}\right],-\frac{2 \sqrt{b^2-4 a c}\, e}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}\right]\right) \Big/ \left(15 e^5 \sqrt{\frac{c (d+e x)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}} \sqrt{a+b x+c x^2}\right)-\left(2 \sqrt{2} \sqrt{b^2-4 a c} (2 c d-b e) \left(128 c^2 d^2+15 b^2 e^2-4 c e (32 b d-17 a e)\right) \sqrt{\frac{c (d+e x)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}} \sqrt{-\frac{c \left(a+b x+c x^2\right)}{b^2-4 a c}} \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4 a c}+2 c x}{\sqrt{b^2-4 a c}}}}{\sqrt{2}}\right],-\frac{2 \sqrt{b^2-4 a c}\, e}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}\right]\right) \Big/ \left(15 c e^5 \sqrt{d+e x} \sqrt{a+b x+c x^2}\right)$$

Result (type 4, 8929 leaves):

$$\frac{1}{a+b x+c x^2}$$

$$\sqrt{d+e x}\ \left(a+x\ (b+c x)\right)^{3/2}\ \left(-\frac{2\ c\ (28\ c\ d-17\ b\ e)}{15\ e^4}+\frac{4\ c^2\ x}{5\ e^3}-\frac{2\ (-2\ c\ d+b\ e)\ \left(c\ d^2-b\ d\ e+a\ e^2\right)}{3\ e^4\ (d+e x)^2}-\right.$$

$$\left.\frac{4\ \left(11\ c^2\ d^2-11\ b\ c\ d\ e+2\ b^2\ e^2+3\ a\ c\ e^2\right)}{3\ e^4\ (d+e x)}\right)-\frac{1}{15\ e^6\ \left(a+b\ x+c\ x^2\right)^{3/2}}\ 2\ \left(a+x\ (b+c x)\right)^{3/2}$$

$$\left(-\left(\left(2\ \left(128\ c^2\ d^2-128\ b\ c\ d\ e+23\ b^2\ e^2+36\ a\ c\ e^2\right)\ (d+e x)^{3/2}\ \left(c+\frac{c\ d^2}{(d+e x)^2}-\frac{b\ d\ e}{(d+e x)^2}+\right.\right.\right.\right.$$

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

$$\left(64\ i\ \sqrt{2}\ c^3\ d^4\ \left(2\ c\ d-b\ e+\sqrt{b^2\ e^2-4\ a\ c\ e^2}\right)\ (d+e x)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[i\ \text{ArcSinh}\left[\frac{\sqrt{2}\ \sqrt{-\frac{c\ d^2-b\ d\ e+a\ e^2}{2\ c\ d-b\ e-\sqrt{b^2\ e^2-4\ a\ c\ e^2}}}}{\sqrt{d+e x}}\right],\ \frac{2\ c\ d-b\ e-\sqrt{b^2\ e^2-4\ a\ c\ e^2}}{2\ c\ d-b\ e+\sqrt{b^2\ e^2-4\ a\ c\ e^2}}\right]-\right.$$

$$\left.\left.\text{EllipticF}\left[i\ \text{ArcSinh}\left[\frac{\sqrt{2}\ \sqrt{-\frac{c\ d^2-b\ d\ e+a\ e^2}{2\ c\ d-b\ e-\sqrt{b^2\ e^2-4\ a\ c\ e^2}}}}{\sqrt{d+e x}}\right],\ \frac{2\ c\ d-b\ e-\sqrt{b^2\ e^2-4\ a\ c\ e^2}}{2\ c\ d-b\ e+\sqrt{b^2\ e^2-4\ a\ c\ e^2}}\right]\right)\right)\Bigg/$$

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

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

$$\left(128 \, i \sqrt{2} \, b c^2 d^3 e \left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right) (d + e x)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[i \, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right] -\right.$$

$$\left.\left.\text{EllipticF}\left[i \, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right]\right)\right) \Big/$$

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

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

$$\left(151\, i\, b^2 c\, d^2 e^2\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\left.\left.\text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right) \Big/$$

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

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

$$\left(82\,i\,\sqrt{2}\,a\,c^2\,d^2\,e^2\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\left.\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/$$

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

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

$$\left(23\,i\,b^3\,d\,e^3\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\left.\left.\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/$$

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

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

$$\left(82\,\mathbb{i}\,\sqrt{2}\,a\,b\,c\,d\,e^3\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\left.\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/$$

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

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

$$\left(23\,\mathrm{i}\,a b^2 e^4\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\left.\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Bigg/$$

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

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

$$\left(18\,i\sqrt{2}\,a^2 c e^4\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\left.\left.\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Bigg/$$

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

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

$$\left(128\,\mathbb{i}\,\sqrt{2}\,c^3 d^3\,(d+e x)\sqrt{c+\frac{c d^2}{(d+e x)^2}-\frac{b d e}{(d+e x)^2}+\frac{a e^2}{(d+e x)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}}\right.$$

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

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

$$\left.\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Bigg/$$

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

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

$$\left(192\, i \sqrt{2}\, b\, c^2 d^2 e\, (d+e x) \sqrt{c+\frac{c d^2}{(d+e x)^2}-\frac{b d e}{(d+e x)^2}+\frac{a e^2}{(d+e x)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}}\right.$$

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

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

$$\left.\text{EllipticF}\left[i \,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Bigg/$$

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

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

$$\left(79\, i \sqrt{2}\, b^2 c\, d\, e^2 (d+e x) \sqrt{c+\frac{c d^2}{(d+e x)^2}-\frac{b d e}{(d+e x)^2}+\frac{a e^2}{(d+e x)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}}\right.$$

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

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

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Big/$$

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

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

$$\left(68\,\mathrm{i}\,\sqrt{2}\,a\,c^2\,d\,e^2\,(d+e\,x)\,\sqrt{c+\frac{c\,d^2}{(d+e\,x)^2}-\frac{b\,d\,e}{(d+e\,x)^2}+\frac{a\,e^2}{(d+e\,x)^2}-\frac{2\,c\,d}{d+e\,x}+\frac{b\,e}{d+e\,x}}\right.$$

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

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

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Big/$$

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

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

$$\left(15\, i\, b^3 e^3 (d+e x) \sqrt{c+\frac{c d^2}{(d+e x)^2}-\frac{b d e}{(d+e x)^2}+\frac{a e^2}{(d+e x)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}}\right.$$

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

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

$$\left.\text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Big/$$

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

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

$$\left(34\, i \sqrt{2}\, a b c e^3 (d+e x) \sqrt{c+\frac{c d^2}{(d+e x)^2}-\frac{b d e}{(d+e x)^2}+\frac{a e^2}{(d+e x)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}}\right.$$

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

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

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\Bigg)\Bigg/$$

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

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

Problem 1636: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 701 leaves, 7 steps):

$$\left(2\,c\,\left(128\,c^2\,d^3-4\,c\,d\,e\,(44\,b\,d-29\,a\,e)+3\,b\,e^2\,(17\,b\,d-16\,a\,e)+e\,\left(32\,c^2\,d^2+3\,b^2\,e^2-4\,c\,e\,(8\,b\,d-5\,a\,e)\right)\,x\right)\sqrt{a+b\,x+c\,x^2}\right)\Big/\left(15\,e^4\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\sqrt{d+e\,x}\right)-$$

$$\left(2\,\left(16\,c^2\,d^3+3\,a\,b\,e^3-c\,d\,e\,(13\,b\,d-4\,a\,e)+e\,\left(22\,c^2\,d^2+3\,b^2\,e^2-2\,c\,e\,(11\,b\,d-5\,a\,e)\right)\,x\right)\left(a+b\,x+c\,x^2\right)^{3/2}\right)\Big/\left(15\,e^2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,(d+e\,x)^{5/2}\right)-$$

$$\left(\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,(2\,c\,d-b\,e)\,\left(128\,c^2\,d^2+3\,b^2\,e^2-4\,c\,e\,(32\,b\,d-29\,a\,e)\right)\sqrt{d+e\,x}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\;\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/$$

$$\left(15\,e^5\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{a+b\,x+c\,x^2}\right)+$$

$$\left(4\,\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,\left(128\,c^2\,d^2+27\,b^2\,e^2-4\,c\,e\,(32\,b\,d-5\,a\,e)\right)\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/$$

$$\left(15\,e^5\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 5450 leaves):

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

$$\left(\frac{4 c^2}{3 e^4}-\frac{2 (-2 c d+b e) (c d^2-b d e+a e^2)}{5 e^4 (d+e x)^3}-\frac{4 (17 c^2 d^2-17 b c d e+3 b^2 e^2+5 a c e^2)}{15 e^4 (d+e x)^2}-\right.$$
$$\left.\frac{2 (-2 c d+b e) (73 c^2 d^2-73 b c d e+3 b^2 e^2+61 a c e^2)}{15 e^4 (c d^2-b d e+a e^2) (d+e x)}\right)-$$
$$\frac{1}{15 e^6 (c d^2-b d e+a e^2) (a+b x+c x^2)^{3/2}} 2 c (a+x (b+c x))^{3/2}$$
$$\left(\left((2 c d-b e) (128 c^2 d^2-128 b c d e+3 b^2 e^2+116 a c e^2) (d+e x)^{3/2}\right.\right.$$
$$\left.\left(c+\frac{c d^2}{(d+e x)^2}-\frac{b d e}{(d+e x)^2}+\frac{a e^2}{(d+e x)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}\right)\right)\Big/$$
$$\left(c \sqrt{\frac{(d+e x)^2 \left(c \left(-1+\frac{d}{d+e x}\right)^2+\frac{e \left(b-\frac{b d}{d+e x}+\frac{a e}{d+e x}\right)}{d+e x}\right)}{e^2}}\right)-\frac{1}{c \sqrt{\frac{(d+e x)^2 \left(c \left(-1+\frac{d}{d+e x}\right)^2+\frac{e \left(b-\frac{b d}{d+e x}+\frac{a e}{d+e x}\right)}{d+e x}\right)}{e^2}}}$$
$$(c d^2-b d e+a e^2) (d+e x) \sqrt{c+\frac{c d^2}{(d+e x)^2}-\frac{b d e}{(d+e x)^2}+\frac{a e^2}{(d+e x)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}} \left(\left(64 \, \mathrm{i}\right.\right.$$
$$\sqrt{2} c^3 d^3 \left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right) \sqrt{1-\frac{2 (c d^2-b d e+a e^2)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right) (d+e x)}}$$
$$\sqrt{1-\frac{2 (c d^2-b d e+a e^2)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right) (d+e x)}}$$
$$\left(\text{EllipticE}\left[\mathrm{i} \operatorname{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$
$$\text{EllipticF}\left[\mathrm{i} \operatorname{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-\left(96\,\mathrm{i}\,\sqrt{2}\right.$$

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

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

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+\left(67\,\mathrm{i}\right.$$

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

$$\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\right.\right.\right.$$

$$\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-\text{EllipticF}\Big[\mathbb{i}$$

$$\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Bigg)\Bigg)\Bigg/$$

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

$$\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)+\Bigg(58\,\mathbb{i}\,\sqrt{2}\,a\,c^2\,d\,e^2$$

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

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

$$\Bigg(\text{EllipticE}\Big[\mathbb{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-$$

$$\text{EllipticF}\Big[\mathbb{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],$$

$$\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Bigg)\Bigg)\Bigg/\Bigg(\left(c\,d^2-b\,d\,e+a\,e^2\right)$$

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

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

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}\,\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\right.\right.\right.$$

$$\left.\left.\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\text{EllipticF}\left[\mathbb{i}\right.$$

$$\left.\left.\left.\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/$$

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

$$\left.\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-\left(29\,\mathbb{i}\,\sqrt{2}\,a\,b\,c\,e^3\right.$$

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

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

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right) \Big/ \left(\left(c d^2-b d e+a e^2\right)\right.$$

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

$$\left(128 i \sqrt{2} c^3 d^2 \sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

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

$$\left.\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Big/$$

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

$$\left(128 i \sqrt{2} b c^2 d e \sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

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

$$\left.\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Big/$$

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

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

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

$$\left.\text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Bigg/$$

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

$$\left(20\, i \sqrt{2}\, a c^2 e^2 \sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

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

$$\left.\text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Bigg/$$

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

Problem 1637: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 600 leaves, 8 steps):

$$\frac{4\left(3 c^2 d^2+2 b^2 e^2-c e (3 b d+5 a e)\right) \sqrt{d+e x} \sqrt{a+b x+c x^2}}{21 c^2}+\frac{2 (2 c d-b e) (d+e x)^{3/2} \sqrt{a+b x+c x^2}}{7 c}+\frac{4}{7} (d+e x)^{5/2} \sqrt{a+b x+c x^2}+$$

$$\left(\sqrt{2} \sqrt{b^2-4 a c}\, (2 c d-b e) \left(3 c^2 d^2+8 b^2 e^2-c e (3 b d+29 a e)\right) \sqrt{d+e x} \sqrt{-\frac{c \left(a+b x+c x^2\right)}{b^2-4 a c}}\right.$$

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

$$\left(21 c^3 e \sqrt{\frac{c (d+e x)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}} \sqrt{a+b x+c x^2}\right)-$$

$$\left(4 \sqrt{2} \sqrt{b^2-4 a c}\, \left(c d^2-b d e+a e^2\right) \left(3 c^2 d^2+2 b^2 e^2-c e (3 b d+5 a e)\right)\right.$$

$$\sqrt{\frac{c (d+e x)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}} \sqrt{-\frac{c \left(a+b x+c x^2\right)}{b^2-4 a c}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4 a c}+2 c x}{\sqrt{b^2-4 a c}}}}{\sqrt{2}}\right],\right.$$

$$\left.\left.-\frac{2 \sqrt{b^2-4 a c}\, e}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}\right]\right)\Bigg/\left(21 c^3 e \sqrt{d+e x} \sqrt{a+b x+c x^2}\right)$$

Result (type 4, 5339 leaves):

$$\frac{1}{\sqrt{a+x\,(b+c\,x)}}$$

$$\sqrt{d+e\,x}\;\left(a+b\,x+c\,x^2\right)\;\left(\frac{2\,\left(18\,c^2\,d^2-9\,b\,c\,d\,e+4\,b^2\,e^2-10\,a\,c\,e^2\right)}{21\,c^2}+\frac{2\,e\,(6\,c\,d-b\,e)\,x}{7\,c}+\frac{4\,e^2\,x^2}{7}\right)-$$

$$\frac{1}{21\,c^2\,e^2\,\sqrt{a+x\,(b+c\,x)}}\;2\,\sqrt{a+b\,x+c\,x^2}$$

$$\Bigg(-\Bigg(\Bigg((2\,c\,d-b\,e)\;\left(3\,c^2\,d^2-3\,b\,c\,d\,e+8\,b^2\,e^2-29\,a\,c\,e^2\right)\;(d+e\,x)^{3/2}\;\Bigg(c+\frac{c\,d^2}{(d+e\,x)^2}-\frac{b\,d\,e}{(d+e\,x)^2}+$$

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

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

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

$$\Bigg(\Bigg(3\,\mathbb{i}\,c^3\,d^3\,\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}$$

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

$$\Bigg(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

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

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

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\,\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\right.\right.\right.$$

$$\left.\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\text{EllipticF}\left[i\right.$$

$$\left.\left.\left.\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/$$

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

$$\left.\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+\left(19\,i\,b^2\,c\,d\,e^2\right.$$

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

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\,\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\right.\right.\right.$$

$$\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-\text{EllipticF}\Big[\mathbb{i}$$

$$\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Big)\Big)\Big/$$

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

$$\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Big)-\Big(29\,\mathbb{i}\,a\,c^2\,d\,e^2$$

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

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\,\Big(\text{EllipticE}\Big[\mathbb{i}\,\text{ArcSinh}\Big[$$

$$\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-\text{EllipticF}\Big[\mathbb{i}$$

$$\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Big)\Big)\Big/$$

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

$$\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Big)-\Big(2\,\mathbb{i}\,\sqrt{2}\,b^3\,e^3$$

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

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

$$\left(\text{EllipticE}\left[\mathbb{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right) \Big/ \left(\left(c d^2-b d e+a e^2\right)\right.$$

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

$$\left(29\, \mathbb{i}\, a b c e^3 \left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right) \sqrt{1-\frac{2 \left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right) (d+e x)}}\right.$$

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

$$\left(\text{EllipticE}\left[\mathbb{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right) \Big/ \left(2 \sqrt{2} \left(c d^2-b d e+a e^2\right)\right.$$

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

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

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

$$\left.\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Big/$$

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

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

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

$$\left.\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Big/$$

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

$$\left(2\,\mathrm{i}\,\sqrt{2}\,b^2\,c\,e^2\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

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

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Big/$$

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

$$\left(5\,\mathrm{i}\,\sqrt{2}\,a\,c^2\,e^2\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

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

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Big/$$

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

Problem 1638: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 507 leaves, 7 steps):

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

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

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

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

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

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

$$\left(5 c^2 e\sqrt{d+e x}\sqrt{a+b x+c x^2}\right)$$

Result (type 4, 3394 leaves):

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

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

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

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

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

$$\left(\left(\mathbb{i}\,c^2 d^2\left(2\,c\,d-b\,e+\sqrt{b^2 e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2 e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\right.\right.$$

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

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2 e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2 e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2 e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2 e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2 e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2 e^2-4\,a\,c\,e^2}}\right]\right)\right)\right/\left(\sqrt{2}\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c\, d^2 - b\, d\, e + a\, e^2}{2\, c\, d - b\, e - \sqrt{b^2\, e^2 - 4\, a\, c\, e^2}}}}{\sqrt{d + e\, x}}\right], \frac{2\, c\, d - b\, e - \sqrt{b^2\, e^2 - 4\, a\, c\, e^2}}{2\, c\, d - b\, e + \sqrt{b^2\, e^2 - 4\, a\, c\, e^2}}\right] - \right.$$

$$\text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c\, d^2 - b\, d\, e + a\, e^2}{2\, c\, d - b\, e - \sqrt{b^2\, e^2 - 4\, a\, c\, e^2}}}}{\sqrt{d + e\, x}}\right],\right.$$

$$\left.\left.\left.\frac{2\, c\, d - b\, e - \sqrt{b^2\, e^2 - 4\, a\, c\, e^2}}{2\, c\, d - b\, e + \sqrt{b^2\, e^2 - 4\, a\, c\, e^2}}\right]\right)\right) \Big/ \left(\sqrt{2}\left(c\, d^2 - b\, d\, e + a\, e^2\right)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c\, d^2 - b\, d\, e + a\, e^2}{2\, c\, d - b\, e - \sqrt{b^2\, e^2 - 4\, a\, c\, e^2}}}}{\sqrt{d + e\, x}}\right], \frac{2\, c\, d - b\, e - \sqrt{b^2\, e^2 - 4\, a\, c\, e^2}}{2\, c\, d - b\, e + \sqrt{b^2\, e^2 - 4\, a\, c\, e^2}}\right] - \right.$$

$$\text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c\, d^2 - b\, d\, e + a\, e^2}{2\, c\, d - b\, e - \sqrt{b^2\, e^2 - 4\, a\, c\, e^2}}}}{\sqrt{d + e\, x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

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

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

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

$$\left(\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

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

$$\left(\mathrm{i}\,\sqrt{2}\,c^2\,d\,\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\right.$$

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

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Big/$$

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

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

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

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Big/$$

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

Problem 1639: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 441 leaves, 6 steps):

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

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

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

$$\left(4\,\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\sqrt{\frac{c\,\left(d+e\,x\right)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\,\text{EllipticF}\left[\right.\right.$$

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

Result (type 4, 581 leaves):

$$\frac{1}{6\sqrt{a+x\,(b+c\,x)}}\left(\frac{4\,(2\,c\,d-b\,e)\,(a+x\,(b+c\,x))}{c\,\sqrt{d+e\,x}}+8\,\sqrt{d+e\,x}\,(a+x\,(b+c\,x))-\right.$$

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

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

$$\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{\frac{c\,d^2-b\,d\,e+a\,e^2}{-2\,c\,d+b\,e+\sqrt{(b^2-4\,a\,c)\,e^2}}}}{\sqrt{d+e\,x}}\right],-\frac{-2\,c\,d+b\,e+\sqrt{(b^2-4\,a\,c)\,e^2}}{2\,c\,d-b\,e+\sqrt{(b^2-4\,a\,c)\,e^2}}\right]+$$

$$\left(-b^2\,e^2+4\,a\,c\,e^2-2\,c\,d\,\sqrt{(b^2-4\,a\,c)\,e^2}+b\,e\,\sqrt{(b^2-4\,a\,c)\,e^2}\right)$$

$$\left.\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{\frac{c\,d^2-b\,d\,e+a\,e^2}{-2\,c\,d+b\,e+\sqrt{(b^2-4\,a\,c)\,e^2}}}}{\sqrt{d+e\,x}}\right],-\frac{-2\,c\,d+b\,e+\sqrt{(b^2-4\,a\,c)\,e^2}}{2\,c\,d-b\,e+\sqrt{(b^2-4\,a\,c)\,e^2}}\right]\right)\right)$$

Problem 1640: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 391 leaves, 5 steps):

$$\left(2\sqrt{2}\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4ac}+2cx}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right],-\frac{2\sqrt{b^2-4ac}\ e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right]\right)\Big/$$

$$\left(e\sqrt{\frac{c\left(d+ex\right)}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}}\sqrt{a+bx+cx^2}\right)-$$

$$\left(2\sqrt{2}\sqrt{b^2-4ac}\left(2cd-be\right)\sqrt{\frac{c\left(d+ex\right)}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\ \text{EllipticF}\left[\right.\right.$$

$$\left.\left.\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4ac}+2cx}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right],-\frac{2\sqrt{b^2-4ac}\ e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right]\right)\Big/\left(ce\sqrt{d+ex}\sqrt{a+bx+cx^2}\right)$$

Result (type 4, 793 leaves) :

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

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

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

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

$$\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{\frac{c\,d^2-b\,d\,e+a\,e^2}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}}{\sqrt{d+e\,x}}\right],-\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}\right]+$$

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

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

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{\frac{c\,d^2-b\,d\,e+a\,e^2}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}}{\sqrt{d+e\,x}}\right],-\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}\right]\right)$$

Problem 1641: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 458 leaves, 6 steps):

$$\frac{2\left(2cd-be\right)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}}-\left(\sqrt{2}\sqrt{b^2-4ac}\left(2cd-be\right)\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4ac}+2cx}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right],-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right]\right)\Bigg/$$

$$\left(e\left(cd^2-bde+ae^2\right)\sqrt{\frac{c\left(d+ex\right)}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}}\sqrt{a+bx+cx^2}\right)+$$

$$\left(4\sqrt{2}\sqrt{b^2-4ac}\sqrt{\frac{c\left(d+ex\right)}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,\text{EllipticF}\left[\right.\right.$$

$$\left.\left.\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4ac}+2cx}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right],-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right]\right)\Bigg/\left(e\sqrt{d+ex}\sqrt{a+bx+cx^2}\right)$$

Result (type 4, 541 leaves):

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

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

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

$$\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{\frac{c d^2-b d e+a e^2}{-2 c d+b e+\sqrt{\left(b^2-4 a c\right) e^2}}}}{\sqrt{d+e x}}\right], -\frac{-2 c d+b e+\sqrt{\left(b^2-4 a c\right) e^2}}{2 c d-b e+\sqrt{\left(b^2-4 a c\right) e^2}}\right]+$$

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

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{\frac{c d^2-b d e+a e^2}{-2 c d+b e+\sqrt{\left(b^2-4 a c\right) e^2}}}}{\sqrt{d+e x}}\right], -\frac{-2 c d+b e+\sqrt{\left(b^2-4 a c\right) e^2}}{2 c d-b e+\sqrt{\left(b^2-4 a c\right) e^2}}\right]\right)$$

Problem 1642: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 581 leaves, 7 steps):

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

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

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

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

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

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

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

Result (type 4, 3483 leaves):

$$\frac{1}{\sqrt{a+x\,(b+c\,x)}}$$

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

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

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

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

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

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

$$\Bigg(\Bigg(\mathrm{i}\,c^2\,d^2\,\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}$$

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

$$\Bigg(\mathrm{EllipticE}\Big[\mathrm{i}\,\mathrm{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-$$

$$\mathrm{EllipticF}\Big[\mathrm{i}\,\mathrm{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],$$

$$\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Bigg)\Bigg)\Bigg/\Bigg(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)$$

$$\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)-$$

$$\left(\mathrm{i}\, b\, c\, d\, e \left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right) \sqrt{1 - \frac{2 \left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}\right) (d + e x)}}\right.$$

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

$$\left(\text{EllipticE}\left[\mathrm{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right] - \right.$$

$$\text{EllipticF}\left[\mathrm{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right]\right)\right) \Big/ \left(\sqrt{2} \left(c d^2 - b d e + a e^2\right)\right.$$

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

$$\left(\mathrm{i}\, b^2 e^2 \left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right) \sqrt{1 - \frac{2 \left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}\right) (d + e x)}}\right.$$

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

$$\left(\text{EllipticE}\left[\mathrm{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right] - \right.$$

$$\text{EllipticF}\left[\mathrm{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

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

$$\left(\mathrm{i}\,\sqrt{2}\,c^2\,d\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

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

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Bigg/$$

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

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

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

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Bigg/$$

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

Problem 1643: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 540 leaves, 8 steps):

$$-\frac{2\,(d+e\,x)^{7/2}}{\sqrt{a+b\,x+c\,x^2}}+\frac{56\,e^2\,(2\,c\,d-b\,e)\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}}{15\,c^2}+\frac{14\,e^2\,(d+e\,x)^{3/2}\,\sqrt{a+b\,x+c\,x^2}}{5\,c}+$$

$$\left(7\,\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,\,e\,\left(23\,c^2\,d^2+8\,b^2\,e^2-c\,e\,(23\,b\,d+9\,a\,e)\right)\sqrt{d+e\,x}\,\sqrt{-\frac{c\,(a+b\,x+c\,x^2)}{b^2-4\,a\,c}}\right.$$

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

$$\left(15\,c^3\,\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{a+b\,x+c\,x^2}\right)-$$

$$\left(56\,\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,\,e\,(2\,c\,d-b\,e)\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\right.$$

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

$$\left(15\,c^3\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 943 leaves) :

$$\Bigg(\sqrt{d+e\,x}\,\left(a+b\,x+c\,x^2\right)^2\,\Bigg(\frac{2\,e^2\,\left(32\,c\,d-13\,b\,e\right)}{15\,c^2}+\frac{4\,e^3\,x}{5\,c}-$$

$$\left(2\,\left(c^2\,d^3-3\,a\,c\,d\,e^2+a\,b\,e^3+3\,c^2\,d^2\,e\,x-3\,b\,c\,d\,e^2\,x+b^2\,e^3\,x-a\,c\,e^3\,x\right)\right)\Big/$$

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

$$\frac{1}{15\,c^3\,\left(a+x\,\left(b+c\,x\right)\right)^{3/2}\,\sqrt{\frac{\left(d+e\,x\right)^2\,\left(c\,\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\,\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)}{e^2}}}$$

$$14\,\left(d+e\,x\right)^{3/2}\,\left(a+b\,x+c\,x^2\right)^{3/2}$$

$$\Bigg(\left(23\,c^2\,d^2+8\,b^2\,e^2-c\,e\,\left(23\,b\,d+9\,a\,e\right)\right)\,\left(c\,\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\,\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)-$$

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

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

$$\Bigg(\left(2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\,\left(23\,c^2\,d^2+8\,b^2\,e^2-c\,e\,\left(23\,b\,d+9\,a\,e\right)\right)\,\text{EllipticE}\Big[$$

$$\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{\frac{c\,d^2-b\,d\,e+a\,e^2}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}}{\sqrt{d+e\,x}}\Big],-\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}\Big]+\Big(-30\,c^3\,d^3+$$

$$8\,b^2\,e^2\,\left(b\,e-\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)-c^2\,d\,\left(-45\,b\,d\,e-34\,a\,e^2+23\,d\,\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)+$$

$$c\,e\,\left(-31\,b^2\,d\,e-17\,a\,b\,e^2+23\,b\,d\,\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+9\,a\,e\,\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\Big)$$

$$\text{EllipticF}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{\frac{c\,d^2-b\,d\,e+a\,e^2}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}}{\sqrt{d+e\,x}}\Big],-\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}\Big]\Bigg)\Bigg)$$

Problem 1644: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 468 leaves, 7 steps):

$$-\frac{2\,(d+e\,x)^{5/2}}{\sqrt{a+b\,x+c\,x^2}}+\frac{10\,e^2\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}}{3\,c}+$$

$$\left(10\,\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,\,e\,(2\,c\,d-b\,e)\,\sqrt{d+e\,x}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

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

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

$$\left(10\,\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,\,e\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

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

$$\left(3\,c^2\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 780 leaves):

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

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

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

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

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

$$\left(\left(-2\,c\,d+b\,e\right)\,\left(2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\right.$$

$$\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{\frac{c\,d^2-b\,d\,e+a\,e^2}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}}{\sqrt{d+e\,x}}\right],\,-\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}\right]+$$

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

$$\left.\left.\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{\frac{c\,d^2-b\,d\,e+a\,e^2}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}}{\sqrt{d+e\,x}}\right],\,-\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}\right]\right)\right)$$

Problem 1645: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 216 leaves, 3 steps):

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

Result (type 4, 378 leaves):

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

Problem 1646: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 216 leaves, 3 steps):

$$-\frac{2\sqrt{d+e\,x}}{\sqrt{a+b\,x+c\,x^2}}+\left(2\sqrt{2}\sqrt{b^2-4\,a\,c}\;e\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}}\sqrt{-\frac{c\,(a+b\,x+c\,x^2)}{b^2-4\,a\,c}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\sqrt{b^2-4\,a\,c}\;e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}\right]\right)\Big/\left(c\sqrt{d+e\,x}\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 318 leaves):

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

Problem 1647: Result unnecessarily involves imaginary or complex numbers.

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

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

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

Result (type 4, 405 leaves):

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

Problem 1648: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 559 leaves, 7 steps):

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

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

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

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

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

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

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

Result (type 4, 859 leaves):

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

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

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

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

$$\left(\left(-2\,c\,d+b\,e\right)\left(2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\,\mathrm{EllipticE}\Big[\right.$$

$$\mathrm{i}\,\mathrm{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{\frac{c\,d^2-b\,d\,e+a\,e^2}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}}{\sqrt{d+e\,x}}\Big],\,-\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}\Big]+\Big(3\,c^2\,d^2+$$

$$b\,e\left(b\,e-\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)+c\left(-3\,b\,d\,e-a\,e^2+2\,d\,\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\Big)\,\mathrm{EllipticF}\Big[$$

$$\left.\left.\left.\mathrm{i}\,\mathrm{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{\frac{c\,d^2-b\,d\,e+a\,e^2}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}}{\sqrt{d+e\,x}}\Big],\,-\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}\Big]\right)\right)\right)\Big/$$

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

Problem 1649: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 573 leaves, 8 steps):

$$-\frac{2\,(d+e\,x)^{7/2}}{3\,\left(a+b\,x+c\,x^2\right)^{3/2}}-\frac{14\,e\,(d+e\,x)^{3/2}\,\left(b\,d-2\,a\,e+(2\,c\,d-b\,e)\,x\right)}{3\,\left(b^2-4\,a\,c\right)\,\sqrt{a+b\,x+c\,x^2}}+$$

$$\frac{14\,e^2\,(2\,c\,d-b\,e)\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}}{3\,c\,\left(b^2-4\,a\,c\right)}+$$

$$\left(14\,\sqrt{2}\,e\,\left(c^2\,d^2+b^2\,e^2-c\,e\,(b\,d+3\,a\,e)\right)\,\sqrt{d+e\,x}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

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

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

$$\left(14\,\sqrt{2}\,e\,(2\,c\,d-b\,e)\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

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

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

Result (type 4, 3578 leaves):

$$\left(\sqrt{d+e\,x}\,\left(a+b\,x+c\,x^2\right)^3\right.$$

$$\left(-\left(\left(2\,\left(c^2\,d^3-3\,a\,c\,d\,e^2+a\,b\,e^3+3\,c^2\,d^2\,e\,x-3\,b\,c\,d\,e^2\,x+b^2\,e^3\,x-a\,c\,e^3\,x\right)\right)\Big/\right.\right.$$

$$\left.\left(3\,c^2\,\left(a+b\,x+c\,x^2\right)^2\right)\right)+$$

$$\left(2\,\left(7\,b\,c^2\,d^2\,e+3\,b^2\,c\,d\,e^2-40\,a\,c^2\,d\,e^2-b^3\,e^3+11\,a\,b\,c\,e^3+14\,c^3\,d^2\,e\,x-14\,b\,c^2\,d\,e^2\,x+\right.\right.$$

$$8 b^2 c e^3 x - 18 a c^2 e^3 x\Big)\Big) \Big/ \left(3 c^2 \left(-b^2 + 4 a c\right) \left(a + b x + c x^2\right)\right)\Big)\Big)\Big) \Big/$$

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

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

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

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

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

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

$$\Bigg(\Bigg(\mathbb{i} c^2 d^2 \left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right) \sqrt{1 - \frac{2 \left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}\right) \left(d + e x\right)}}$$

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

$$\Bigg(\text{EllipticE}\Big[\mathbb{i} \,\text{ArcSinh}\Big[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\Big], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\Big] -$$

$$\text{EllipticF}\Big[\mathbb{i} \,\text{ArcSinh}\Big[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\Big],$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

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

$$\left(\mathrm{i}\,b\,c\,d\,e\,\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

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

$$\left(\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

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

$$\left(\mathrm{i}\,b^2\,e^2\,\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

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

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

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

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

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

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

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

$$\left(\mathbb{i}\sqrt{2}\, c^2 d \sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

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

$$\left.\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Big/$$

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

$$\left(\mathbb{i}\, b c e \sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

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

$$\left.\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Big/$$

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

Problem 1650: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 494 leaves, 7 steps):

$$-\frac{2\,(d+e\,x)^{5/2}}{3\,(a+b\,x+c\,x^2)^{3/2}}-\frac{10\,e\,\sqrt{d+e\,x}\,\left(b\,d-2\,a\,e+(2\,c\,d-b\,e)\,x\right)}{3\,(b^2-4\,a\,c)\,\sqrt{a+b\,x+c\,x^2}}+$$

$$\left(5\,\sqrt{2}\,e\,(2\,c\,d-b\,e)\,\sqrt{d+e\,x}\,\sqrt{-\frac{c\,(a+b\,x+c\,x^2)}{b^2-4\,a\,c}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/$$

$$\left(3\,c\,\sqrt{b^2-4\,a\,c}\,\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{a+b\,x+c\,x^2}\right)-$$

$$\left(20\,\sqrt{2}\,e\,(c\,d^2-b\,d\,e+a\,e^2)\,\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{-\frac{c\,(a+b\,x+c\,x^2)}{b^2-4\,a\,c}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/$$

$$\left(3\,c\,\sqrt{b^2-4\,a\,c}\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 1973 leaves):

$$\left(\sqrt{d+e\,x}\,(a+b\,x+c\,x^2)^3\right.$$

$$\left.\left(-\frac{2\,(c\,d^2-a\,e^2+2\,c\,d\,e\,x-b\,e^2\,x)}{3\,c\,(a+b\,x+c\,x^2)^2}+\frac{2\,(5\,b\,c\,d\,e+b^2\,e^2-14\,a\,c\,e^2+10\,c^2\,d\,e\,x-5\,b\,c\,e^2\,x)}{3\,c\,(-b^2+4\,a\,c)\,(a+b\,x+c\,x^2)}\right)\right)\Big/$$

$$\left(a+x\left(b+c\,x\right)\right)^{5/2}+\frac{1}{3\left(b^2-4\,a\,c\right)\left(a+x\left(b+c\,x\right)\right)^{5/2}}5\left(a+b\,x+c\,x^2\right)^{5/2}$$

$$\left(\left(2\left(2\,c\,d-b\,e\right)\left(d+e\,x\right)^{3/2}\left(c+\frac{c\,d^2}{\left(d+e\,x\right)^2}-\frac{b\,d\,e}{\left(d+e\,x\right)^2}+\frac{a\,e^2}{\left(d+e\,x\right)^2}-\frac{2\,c\,d}{d+e\,x}+\frac{b\,e}{d+e\,x}\right)\right)\Bigg/\right.$$

$$\left(c\sqrt{\frac{\left(d+e\,x\right)^2\left(c\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)}{e^2}}\right)-\frac{1}{c\sqrt{\frac{\left(d+e\,x\right)^2\left(c\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)}{e^2}}}$$

$$2\left(c\,d^2-b\,d\,e+a\,e^2\right)\left(d+e\,x\right)\sqrt{c+\frac{c\,d^2}{\left(d+e\,x\right)^2}-\frac{b\,d\,e}{\left(d+e\,x\right)^2}+\frac{a\,e^2}{\left(d+e\,x\right)^2}-\frac{2\,c\,d}{d+e\,x}+\frac{b\,e}{d+e\,x}}$$

$$\left(\left(\mathbb{i}\,c\,d\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\left(d+e\,x\right)}}\right.\right.$$

$$\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\left(d+e\,x\right)}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\sqrt{2}\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-$$

$$\left(i\, b\, e\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/\left(2\sqrt{2}\left(c d^2-b d e+a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+$$

$$\left(i\sqrt{2}\, c\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Big/$$

$$\left.\left.\left(\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\;\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)\right)\right)$$

Problem 1651: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\left(b+2\,c\,x\right)\,\left(d+e\,x\right)^{3/2}}{\left(a+b\,x+c\,x^2\right)^{5/2}}\,dx$$

Optimal (type 4, 456 leaves, 7 steps):

$$-\frac{2\,(d+e\,x)^{3/2}}{3\,\left(a+b\,x+c\,x^2\right)^{3/2}}-\frac{2\,e\,(b+2\,c\,x)\,\sqrt{d+e\,x}}{\left(b^2-4\,a\,c\right)\sqrt{a+b\,x+c\,x^2}}+\left(2\,\sqrt{2}\,e\,\sqrt{d+e\,x}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}\right]\right)\Bigg/$$

$$\left(\sqrt{b^2-4\,a\,c}\,\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}}\,\sqrt{a+b\,x+c\,x^2}\right)-$$

$$\left(2\,\sqrt{2}\,e\,(2\,c\,d-b\,e)\,\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}\right]\right)\Bigg/$$

$$\left(c\,\sqrt{b^2-4\,a\,c}\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 1031 leaves) :

$$\frac{\sqrt{d+e\,x}\,\left(a+b\,x+c\,x^2\right)^3\left(-\frac{2\,(d+e\,x)}{3\,\left(a+b\,x+c\,x^2\right)^2}-\frac{2\,(b\,e+2\,c\,e\,x)}{\left(b^2-4\,a\,c\right)\left(a+b\,x+c\,x^2\right)}\right)}{(a+x\,(b+c\,x))^{5/2}}+$$

$$\left((d+e\,x)^{3/2}\left(a+b\,x+c\,x^2\right)^{5/2}\left(4\,\sqrt{\frac{c\,d^2+e\,(-b\,d+a\,e)}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)e^2}}}\right.\right.$$

$$\left(c\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)-\frac{1}{\sqrt{d+e\,x}}\,\mathrm{i}\,\sqrt{2}\,\left(2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)e^2}\right)$$

$$\sqrt{\frac{\sqrt{\left(b^2-4\,a\,c\right)\,e^2}-\frac{2\,a\,e^2}{d+e\,x}-2\,c\,d\,\left(-1+\frac{d}{d+e\,x}\right)+b\,e\,\left(-1+\frac{2\,d}{d+e\,x}\right)}{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}$$

$$\sqrt{\frac{\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+\frac{2\,a\,e^2}{d+e\,x}+2\,c\,d\,\left(-1+\frac{d}{d+e\,x}\right)+b\,\left(e-\frac{2\,d\,e}{d+e\,x}\right)}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}\ \text{EllipticE}\Big[$$

$$\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{\frac{c\,d^2-b\,d\,e+a\,e^2}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}}{\sqrt{d+e\,x}}\Big],\,-\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}\Big]+\frac{1}{\sqrt{d+e\,x}}$$

$$\mathrm{i}\,\sqrt{2}\,\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\,\sqrt{\frac{\sqrt{\left(b^2-4\,a\,c\right)\,e^2}-\frac{2\,a\,e^2}{d+e\,x}-2\,c\,d\,\left(-1+\frac{d}{d+e\,x}\right)+b\,e\,\left(-1+\frac{2\,d}{d+e\,x}\right)}{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}$$

$$\sqrt{\frac{\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+\frac{2\,a\,e^2}{d+e\,x}+2\,c\,d\,\left(-1+\frac{d}{d+e\,x}\right)+b\,\left(e-\frac{2\,d\,e}{d+e\,x}\right)}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}$$

$$\text{EllipticF}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{\frac{c\,d^2-b\,d\,e+a\,e^2}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}}{\sqrt{d+e\,x}}\Big],\,-\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}\Big]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\left(b^2-4\,a\,c\right)\,\sqrt{\frac{c\,d^2+e\,\left(-b\,d+a\,e\right)}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}\,\left(a+x\,\left(b+c\,x\right)\right)^{5/2}$$

$$\sqrt{\frac{\left(d+e\,x\right)^2\,\left(c\,\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\,\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)}{e^2}}\Bigg)$$

Problem 1652: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\left(b+2\,c\,x\right)\,\sqrt{d+e\,x}}{\left(a+b\,x+c\,x^2\right)^{5/2}}\,dx$$

Optimal (type 4, 517 leaves, 7 steps):

$$-\frac{2\sqrt{d+e\,x}}{3\left(a+b\,x+c\,x^2\right)^{3/2}}-\frac{2\,e\sqrt{d+e\,x}\left(b\,c\,d-b^2\,e+2\,a\,c\,e+c\left(2\,c\,d-b\,e\right)x\right)}{3\left(b^2-4\,a\,c\right)\left(c\,d^2-b\,d\,e+a\,e^2\right)\sqrt{a+b\,x+c\,x^2}}+$$

$$\left(\sqrt{2}\;e\left(2\,c\,d-b\,e\right)\sqrt{d+e\,x}\;\sqrt{-\frac{c\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\sqrt{b^2-4\,a\,c}\;e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}\right]\right)\Bigg/$$

$$\left(3\sqrt{b^2-4\,a\,c}\;\left(c\,d^2-b\,d\,e+a\,e^2\right)\sqrt{\frac{c\left(d+e\,x\right)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}}\;\sqrt{a+b\,x+c\,x^2}\right)-$$

$$\left(4\sqrt{2}\;e\sqrt{\frac{c\left(d+e\,x\right)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}}\;\sqrt{-\frac{c\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\left.-\frac{2\sqrt{b^2-4\,a\,c}\;e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}\right]\right)\Bigg/\left(3\sqrt{b^2-4\,a\,c}\;\sqrt{d+e\,x}\;\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 2000 leaves):

$$\left(\sqrt{d+e\,x}\;\left(a+b\,x+c\,x^2\right)^3\left(-\frac{2}{3\left(a+b\,x+c\,x^2\right)^2}+\left(2\left(b\,c\,d\,e-b^2\,e^2+2\,a\,c\,e^2+2\,c^2\,d\,e\,x-b\,c\,e^2\,x\right)\right)\Big/\right.\right.$$

$$\left.\left.\left(3\left(-b^2\,c\,d^2+4\,a\,c^2\,d^2+b^3\,d\,e-4\,a\,b\,c\,d\,e-a\,b^2\,e^2+4\,a^2\,c\,e^2\right)\left(a+b\,x+c\,x^2\right)\right)\right)\right)\Bigg/$$

$$\left(a+x\left(b+c\,x\right)\right)^{5/2}+\frac{1}{3\left(b^2-4\,a\,c\right)\left(c\,d^2-b\,d\,e+a\,e^2\right)\left(a+x\left(b+c\,x\right)\right)^{5/2}}$$

$$2\,c\left(a+b\,x+c\,x^2\right)^{5/2}$$

$$\left(\left((2\,c\,d-b\,e)\,(d+e\,x)^{3/2}\left(c+\frac{c\,d^2}{(d+e\,x)^2}-\frac{b\,d\,e}{(d+e\,x)^2}+\frac{a\,e^2}{(d+e\,x)^2}-\frac{2\,c\,d}{d+e\,x}+\frac{b\,e}{d+e\,x}\right)\right)\Big/\right.$$

$$\left(c\sqrt{\frac{(d+e\,x)^2\left(c\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)}{e^2}}\right)-\frac{1}{c\sqrt{\frac{(d+e\,x)^2\left(c\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)}{e^2}}}$$

$$\left(c\,d^2-b\,d\,e+a\,e^2\right)(d+e\,x)\sqrt{c+\frac{c\,d^2}{(d+e\,x)^2}-\frac{b\,d\,e}{(d+e\,x)^2}+\frac{a\,e^2}{(d+e\,x)^2}-\frac{2\,c\,d}{d+e\,x}+\frac{b\,e}{d+e\,x}}$$

$$\left(\left(i\,c\,d\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\right.\right.$$

$$\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}$$

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(\sqrt{2}\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-$$

$$\left(i\, b\, e \left(2\, c\, d - b\, e + \sqrt{b^2 e^2 - 4\, a\, c\, e^2}\right) \sqrt{1 - \frac{2 \left(c\, d^2 - b\, d\, e + a\, e^2\right)}{\left(2\, c\, d - b\, e - \sqrt{b^2 e^2 - 4\, a\, c\, e^2}\right) (d + e\, x)}}\right.$$

$$\sqrt{1 - \frac{2 \left(c\, d^2 - b\, d\, e + a\, e^2\right)}{\left(2\, c\, d - b\, e + \sqrt{b^2 e^2 - 4\, a\, c\, e^2}\right) (d + e\, x)}}$$

$$\left(\text{EllipticE}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{2}\, \sqrt{-\frac{c\, d^2 - b\, d\, e + a\, e^2}{2\, c\, d - b\, e - \sqrt{b^2 e^2 - 4\, a\, c\, e^2}}}}{\sqrt{d + e\, x}}\right], \frac{2\, c\, d - b\, e - \sqrt{b^2 e^2 - 4\, a\, c\, e^2}}{2\, c\, d - b\, e + \sqrt{b^2 e^2 - 4\, a\, c\, e^2}}\right] - \right.$$

$$\text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{2}\, \sqrt{-\frac{c\, d^2 - b\, d\, e + a\, e^2}{2\, c\, d - b\, e - \sqrt{b^2 e^2 - 4\, a\, c\, e^2}}}}{\sqrt{d + e\, x}}\right],\right.$$

$$\left.\left.\left.\frac{2\, c\, d - b\, e - \sqrt{b^2 e^2 - 4\, a\, c\, e^2}}{2\, c\, d - b\, e + \sqrt{b^2 e^2 - 4\, a\, c\, e^2}}\right]\right)\right) \Big/ \left(2\, \sqrt{2}\, \left(c\, d^2 - b\, d\, e + a\, e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\, d^2 - b\, d\, e + a\, e^2}{2\, c\, d - b\, e - \sqrt{b^2 e^2 - 4\, a\, c\, e^2}}}\, \sqrt{c + \frac{c\, d^2 - b\, d\, e + a\, e^2}{(d + e\, x)^2} + \frac{-2\, c\, d + b\, e}{d + e\, x}}\right) +$$

$$\left(i\, \sqrt{2}\, c\, \sqrt{1 - \frac{2 \left(c\, d^2 - b\, d\, e + a\, e^2\right)}{\left(2\, c\, d - b\, e - \sqrt{b^2 e^2 - 4\, a\, c\, e^2}\right) (d + e\, x)}}\right.$$

$$\sqrt{1 - \frac{2 \left(c\, d^2 - b\, d\, e + a\, e^2\right)}{\left(2\, c\, d - b\, e + \sqrt{b^2 e^2 - 4\, a\, c\, e^2}\right) (d + e\, x)}}$$

$$\left.\text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{2}\, \sqrt{-\frac{c\, d^2 - b\, d\, e + a\, e^2}{2\, c\, d - b\, e - \sqrt{b^2 e^2 - 4\, a\, c\, e^2}}}}{\sqrt{d + e\, x}}\right], \frac{2\, c\, d - b\, e - \sqrt{b^2 e^2 - 4\, a\, c\, e^2}}{2\, c\, d - b\, e + \sqrt{b^2 e^2 - 4\, a\, c\, e^2}}\right]\right) \Big/$$

$$\left(\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\;\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)\Bigg)\Bigg)$$

Problem 1653: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{b+2\,c\,x}{\sqrt{d+e\,x}\,\left(a+b\,x+c\,x^2\right)^{5/2}}\,dx$$

Optimal (type 4, 665 leaves, 7 steps):

$$-\frac{2\sqrt{d+e\,x}\,\left(\left(b^2-4\,a\,c\right)\,\left(c\,d-b\,e\right)-c\,\left(b^2-4\,a\,c\right)\,e\,x\right)}{3\,\left(b^2-4\,a\,c\right)\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\left(a+b\,x+c\,x^2\right)^{3/2}}-\left(2\,e\,\sqrt{d+e\,x}\right.$$
$$\left.\left(3\,b^2\,c\,d\,e-8\,a\,c^2\,d\,e-2\,b^3\,e^2-b\,c\,\left(c\,d^2-7\,a\,e^2\right)-2\,c\,\left(c^2\,d^2+b^2\,e^2-c\,e\,\left(b\,d+3\,a\,e\right)\right)\,x\right)\right)\Big/$$
$$\left(3\,\left(b^2-4\,a\,c\right)\,\left(c\,d^2-b\,d\,e+a\,e^2\right)^2\,\sqrt{a+b\,x+c\,x^2}\right)-$$
$$\left(2\,\sqrt{2}\,e\,\left(c^2\,d^2+b^2\,e^2-c\,e\,\left(b\,d+3\,a\,e\right)\right)\,\sqrt{d+e\,x}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$
$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/$$
$$\left(3\,\sqrt{b^2-4\,a\,c}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)^2\,\sqrt{\frac{c\,\left(d+e\,x\right)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{a+b\,x+c\,x^2}\right)+$$
$$\left(2\,\sqrt{2}\,e\,\left(2\,c\,d-b\,e\right)\,\sqrt{\frac{c\,\left(d+e\,x\right)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$
$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/$$
$$\left(3\,\sqrt{b^2-4\,a\,c}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 3575 leaves):

$$\left(\sqrt{d+e\,x}\,\left(a+b\,x+c\,x^2\right)^3\,\left(\frac{2\,\left(-c\,d+b\,e+c\,e\,x\right)}{3\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\left(a+b\,x+c\,x^2\right)^2}+\right.\right.$$
$$\left(2\,\left(b\,c^2\,d^2\,e-3\,b^2\,c\,d\,e^2+8\,a\,c^2\,d\,e^2+2\,b^3\,e^3-7\,a\,b\,c\,e^3+2\,c^3\,d^2\,e\,x-2\,b\,c^2\,d\,e^2\,x+\right.\right.$$

$$2 b^2 c e^3 x - 6 a c^2 e^3 x)\Big)\Big/\Big(3\left(b^2-4 a c\right)\left(-c d^2+b d e-a e^2\right)^2\left(a+b x+c x^2\right)\Big)\Big)\Big)\Big/$$

$$\left(a+x\left(b+c x\right)\right)^{5/2}-\frac{1}{3\left(b^2-4 a c\right)\left(c d^2-b d e+a e^2\right)^2\left(a+x\left(b+c x\right)\right)^{5/2}}$$

$$2 c\left(a+b x+c x^2\right)^{5/2}$$

$$\Bigg(\Bigg(2\left(c^2 d^2-b c d e+b^2 e^2-3 a c e^2\right)\left(d+e x\right)^{3/2}$$

$$\left(c+\frac{c d^2}{\left(d+e x\right)^2}-\frac{b d e}{\left(d+e x\right)^2}+\frac{a e^2}{\left(d+e x\right)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}\right)\Bigg)\Bigg/$$

$$\left(c\sqrt{\frac{\left(d+e x\right)^2\left(c\left(-1+\frac{d}{d+e x}\right)^2+\frac{e\left(b-\frac{b d}{d+e x}+\frac{a e}{d+e x}\right)}{d+e x}\right)}{e^2}}\right)-\frac{1}{c\sqrt{\frac{\left(d+e x\right)^2\left(c\left(-1+\frac{d}{d+e x}\right)^2+\frac{e\left(b-\frac{b d}{d+e x}+\frac{a e}{d+e x}\right)}{d+e x}\right)}{e^2}}}$$

$$\left(c d^2-b d e+a e^2\right)\left(d+e x\right)\sqrt{c+\frac{c d^2}{\left(d+e x\right)^2}-\frac{b d e}{\left(d+e x\right)^2}+\frac{a e^2}{\left(d+e x\right)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}}$$

$$\Bigg(\Bigg(\mathrm{i}\, c^2 d^2\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)\left(d+e x\right)}}$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\left(d+e x\right)}}$$

$$\Bigg(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-$$

$$\left(\mathrm{i}\,b\,c\,d\,e\,\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}$$

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+$$

$$\left(\mathrm{i}\,b^2\,e^2\,\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}$$

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/\left(\sqrt{2}\,\left(c d^2-b d e+a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\,\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)-$$

$$\left(3\,i\,a c e^2\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/\left(\sqrt{2}\,\left(c d^2-b d e+a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\,\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+$$

$$\left(\mathrm{i}\,\sqrt{2}\,c^2\,d\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Bigg/$$

$$\left(\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-$$

$$\left(\mathrm{i}\,b\,c\,e\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Bigg/$$

$$\left.\left.\left(\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)\right)\right)$$

Problem 1654: Result more than twice size of optimal antiderivative.

$$\int\left(b+2\,c\,x\right)\,\left(d+e\,x\right)^m\,\left(a+b\,x+c\,x^2\right)^3\,dx$$

Optimal (type 3, 449 leaves, 2 steps):

$$-\frac{(2 c d-b e)\left(c d^2-b d e+a e^2\right)^3 (d+e x)^{1+m}}{e^8 (1+m)}+\frac{\left(c d^2-b d e+a e^2\right)^2 \left(14 c^2 d^2+3 b^2 e^2-2 c e (7 b d-a e)\right) (d+e x)^{2+m}}{e^8 (2+m)}-\frac{1}{e^8 (3+m)}3 (2 c d-b e)\left(c d^2-b d e+a e^2\right)\left(7 c^2 d^2+b^2 e^2-c e (7 b d-3 a e)\right)(d+e x)^{3+m}+\frac{1}{e^8 (4+m)}\left(70 c^4 d^4+b^4 e^4-4 b^2 c e^3 (5 b d-3 a e)-20 c^3 d^2 e (7 b d-3 a e)+6 c^2 e^2 \left(15 b^2 d^2-10 a b d e+a^2 e^2\right)\right)(d+e x)^{4+m}-\frac{5 c (2 c d-b e)\left(7 c^2 d^2+b^2 e^2-c e (7 b d-3 a e)\right)(d+e x)^{5+m}}{e^8 (5+m)}+\frac{3 c^2 \left(14 c^2 d^2+3 b^2 e^2-2 c e (7 b d-a e)\right)(d+e x)^{6+m}}{e^8 (6+m)}-\frac{7 c^3 (2 c d-b e)(d+e x)^{7+m}}{e^8 (7+m)}+\frac{2 c^4 (d+e x)^{8+m}}{e^8 (8+m)}$$

Result (type 3, 1259 leaves) :

$$\frac{1}{e^8 (1+m)(2+m)(3+m)(4+m)(5+m)(6+m)(7+m)(8+m)}(d+e x)^{1+m}\Big(-2 c^4 \big(5040 d^7-5040 d^6 e (1+m) x+2520 d^5 e^2 \left(2+3 m+m^2\right) x^2-840 d^4 e^3 \left(6+11 m+6 m^2+m^3\right) x^3+210 d^3 e^4 \left(24+50 m+35 m^2+10 m^3+m^4\right) x^4-42 d^2 e^5 \left(120+274 m+225 m^2+85 m^3+15 m^4+m^5\right) x^5+7 d e^6 \left(720+1764 m+1624 m^2+735 m^3+175 m^4+21 m^5+m^6\right) x^6-e^7 \left(5040+13068 m+13132 m^2+6769 m^3+1960 m^4+322 m^5+28 m^6+m^7\right) x^7\big)+b e^4 \left(1680+1066 m+251 m^2+26 m^3+m^4\right)\Big(a^3 e^3 \left(24+26 m+9 m^2+m^3\right)+3 a^2 b e^2 \left(12+7 m+m^2\right)(-d+e (1+m) x)+3 a b^2 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^3 \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)\Big)+c e^3 \left(336+146 m+21 m^2+m^3\right)\Big(2 a^3 e^3 \left(60+47 m+12 m^2+m^3\right)(-d+e (1+m) x)+9 a^2 b e^2 \left(20+9 m+m^2\right)\left(2 d^2-2 d e (1+m) x+e^2 \left(2+3 m+m^2\right) x^2\right)+12 a b^2 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)+5 b^3 \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)\Big)+3 c^2 e^2 \left(56+15 m+m^2\right)\Big(2 a^2 e^2 \left(30+11 m+m^2\right)\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)+5 a b e (6+m)\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)+3 b^2 \left(-120 d^5+120 d^4 e (1+m) x-60 d^3 e^2 \left(2+3 m+m^2\right) x^2+20 d^2 e^3 \left(6+11 m+6 m^2+m^3\right) x^3-5 d e^4 \left(24+50 m+35 m^2+10 m^3+m^4\right) x^4+e^5 \left(120+274 m+225 m^2+85 m^3+15 m^4+m^5\right) x^5\right)\Big)+c^3 e (8+m)\Big(6 a e (7+m)\big(-120 d^5+120 d^4 e (1+m) x-60 d^3 e^2 \left(2+3 m+m^2\right) x^2+20 d^2 e^3 \left(6+11 m+6 m^2+m^3\right) x^3-5 d e^4 \left(24+50 m+35 m^2+10 m^3+m^4\right) x^4+e^5 \left(120+274 m+225 m^2+85 m^3+15 m^4+m^5\right) x^5\big)+7 b \big(720 d^6-720 d^5 e (1+m) x+360 d^4 e^2 \left(2+3 m+m^2\right) x^2-120 d^3 e^3 \left(6+11 m+6 m^2+m^3\right) x^3+30 d^2 e^4 \left(24+50 m+35 m^2+10 m^3+m^4\right) x^4-6 d e^5 \left(120+274 m+225 m^2+85 m^3+15 m^4+m^5\right) x^5+e^6 \left(720+1764 m+1624 m^2+735 m^3+175 m^4+21 m^5+m^6\right) x^6\big)\Big)\Big)$$

Problem 1655: Result more than twice size of optimal antiderivative.

$$\int (b+2\,c\,x)\,(d+e\,x)^m\,\left(a+b\,x+c\,x^2\right)^2\,dx$$

Optimal (type 3, 270 leaves, 2 steps):

$$-\frac{(2\,c\,d-b\,e)\,\left(c\,d^2-b\,d\,e+a\,e^2\right)^2\,(d+e\,x)^{1+m}}{e^6\,(1+m)}+\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\left(5\,c^2\,d^2+b^2\,e^2-c\,e\,(5\,b\,d-a\,e)\right)\,(d+e\,x)^{2+m}}{e^6\,(2+m)}-\frac{(2\,c\,d-b\,e)\,\left(10\,c^2\,d^2+b^2\,e^2-2\,c\,e\,(5\,b\,d-3\,a\,e)\right)\,(d+e\,x)^{3+m}}{e^6\,(3+m)}+\frac{4\,c\,\left(5\,c^2\,d^2+b^2\,e^2-c\,e\,(5\,b\,d-a\,e)\right)\,(d+e\,x)^{4+m}}{e^6\,(4+m)}-\frac{5\,c^2\,(2\,c\,d-b\,e)\,(d+e\,x)^{5+m}}{e^6\,(5+m)}+\frac{2\,c^3\,(d+e\,x)^{6+m}}{e^6\,(6+m)}$$

Result (type 3, 541 leaves):

$$\frac{1}{e^6\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)}(d+e\,x)^{1+m}\Big(-2\,c^3\,\big(120\,d^5-120\,d^4\,e\,(1+m)\,x+60\,d^3\,e^2\,(2+3\,m+m^2)\,x^2-20\,d^2\,e^3\,(6+11\,m+6\,m^2+m^3)\,x^3+5\,d\,e^4\,(24+50\,m+35\,m^2+10\,m^3+m^4)\,x^4-e^5\,(120+274\,m+225\,m^2+85\,m^3+15\,m^4+m^5)\,x^5\big)+b\,e^3\,(120+74\,m+15\,m^2+m^3)\,\big(a^2\,e^2\,(6+5\,m+m^2)+2\,a\,b\,e\,(3+m)\,(-d+e\,(1+m)\,x)+b^2\,(2\,d^2-2\,d\,e\,(1+m)\,x+e^2\,(2+3\,m+m^2)\,x^2)\big)+2\,c\,e^2\,(30+11\,m+m^2)\,\big(a^2\,e^2\,(12+7\,m+m^2)\,(-d+e\,(1+m)\,x)+3\,a\,b\,e\,(4+m)\,(2\,d^2-2\,d\,e\,(1+m)\,x+e^2\,(2+3\,m+m^2)\,x^2)-2\,b^2\,(6\,d^3-6\,d^2\,e\,(1+m)\,x+3\,d\,e^2\,(2+3\,m+m^2)\,x^2-e^3\,(6+11\,m+6\,m^2+m^3)\,x^3)\big)+c^2\,e\,(6+m)\,\big(4\,a\,e\,(5+m)\,(-6\,d^3+6\,d^2\,e\,(1+m)\,x-3\,d\,e^2\,(2+3\,m+m^2)\,x^2+e^3\,(6+11\,m+6\,m^2+m^3)\,x^3)+5\,b\,(24\,d^4-24\,d^3\,e\,(1+m)\,x+12\,d^2\,e^2\,(2+3\,m+m^2)\,x^2-4\,d\,e^3\,(6+11\,m+6\,m^2+m^3)\,x^3+e^4\,(24+50\,m+35\,m^2+10\,m^3+m^4)\,x^4)\big)\Big)$$

Problem 1658: Unable to integrate problem.

$$\int \frac{(b+2\,c\,x)\,(d+e\,x)^m}{\left(a+b\,x+c\,x^2\right)^2}\,dx$$

Optimal (type 5, 358 leaves, 5 steps):

$$-\frac{(d+e x)^{1+m}\left(\left(b^2-4 a c\right)(c d-b e)-c\left(b^2-4 a c\right) e x\right)}{\left(b^2-4 a c\right)\left(c d^2-b d e+a e^2\right)\left(a+b x+c x^2\right)}-$$
$$\left(c e\left(2 c d-\left(b+\sqrt{b^2-4 a c}\right) e\right) m (d+e x)^{1+m}\right.$$
$$\left.\text{Hypergeometric2F1}\left[1,1+m,2+m,\frac{2 c (d+e x)}{2 c d-\left(b-\sqrt{b^2-4 a c}\right) e}\right]\right)\Big/$$
$$\left(\sqrt{b^2-4 a c}\left(2 c d-\left(b-\sqrt{b^2-4 a c}\right) e\right)\left(c d^2-b d e+a e^2\right)(1+m)\right)+$$
$$\left(c e\left(2 c d-\left(b-\sqrt{b^2-4 a c}\right) e\right) m (d+e x)^{1+m}\right.$$
$$\left.\text{Hypergeometric2F1}\left[1,1+m,2+m,\frac{2 c (d+e x)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}\right]\right)\Big/$$
$$\left(\sqrt{b^2-4 a c}\left(2 c d-\left(b+\sqrt{b^2-4 a c}\right) e\right)\left(c d^2-b d e+a e^2\right)(1+m)\right)$$

Result (type 8, 28 leaves) :

$$\int \frac{(b+2 c x)(d+e x)^m}{\left(a+b x+c x^2\right)^2}\, dx$$

Problem 1659: Result more than twice size of optimal antiderivative.

$$\int (A+B x)(d+e x)^5\left(a^2+2 a b x+b^2 x^2\right) dx$$

Optimal (type 1, 120 leaves, 3 steps) :

$$-\frac{(b d-a e)^2(B d-A e)(d+e x)^6}{6 e^4}+\frac{(b d-a e)(3 b B d-2 A b e-a B e)(d+e x)^7}{7 e^4}-$$
$$\frac{b(3 b B d-A b e-2 a B e)(d+e x)^8}{8 e^4}+\frac{b^2 B(d+e x)^9}{9 e^4}$$

Result (type 1, 330 leaves) :

$$a^2 A d^5 x + \frac{1}{2} a d^4 (2 A b d + a B d + 5 a A e) x^2 + \frac{1}{3} d^3 (a B d (2 b d + 5 a e) + A (b^2 d^2 + 10 a b d e + 10 a^2 e^2)) x^3 + \frac{1}{4} d^2 (10 a^2 e^2 (B d + A e) + 10 a b d e (B d + 2 A e) + b^2 d^2 (B d + 5 A e)) x^4 + d e (4 a b d e (B d + A e) + a^2 e^2 (2 B d + A e) + b^2 d^2 (B d + 2 A e)) x^5 + \frac{1}{6} e^2 (10 b^2 d^2 (B d + A e) + 10 a b d e (2 B d + A e) + a^2 e^2 (5 B d + A e)) x^6 + \frac{1}{7} e^3 (a^2 B e^2 + 5 b^2 d (2 B d + A e) + 2 a b e (5 B d + A e)) x^7 + \frac{1}{8} b e^4 (5 b B d + A b e + 2 a B e) x^8 + \frac{1}{9} b^2 B e^5 x^9$$

Problem 1660: Result more than twice size of optimal antiderivative.

$$\int (A + B x) (d + e x)^4 (a^2 + 2 a b x + b^2 x^2) \, dx$$

Optimal (type 1, 120 leaves, 3 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):

$$a^2 A d^4 x + \frac{1}{2} a d^3 (2 A b d + a B d + 4 a A e) x^2 + \frac{1}{3} d^2 (2 a B d (b d + 2 a e) + A (b^2 d^2 + 8 a b d e + 6 a^2 e^2)) x^3 + \frac{1}{4} d (2 a^2 e^2 (3 B d + 2 A e) + 4 a b d e (2 B d + 3 A e) + b^2 d^2 (B d + 4 A e)) x^4 + \frac{1}{5} e (a^2 e^2 (4 B d + A e) + 4 a b d e (3 B d + 2 A e) + 2 b^2 d^2 (2 B d + 3 A e)) x^5 + \frac{1}{6} e^2 (a^2 B e^2 + 2 a b e (4 B d + A e) + 2 b^2 d (3 B d + 2 A e)) x^6 + \frac{1}{7} b e^3 (4 b B d + A b e + 2 a B e) x^7 + \frac{1}{8} b^2 B e^4 x^8$$

Problem 1673: Result more than twice size of optimal antiderivative.

$$\int (A + B x) (d + e x)^7 (a^2 + 2 a b x + b^2 x^2)^2 \, dx$$

Optimal (type 1, 206 leaves, 3 steps):

$$-\frac{(b d-a e)^4 (B d-A e) (d+e x)^8}{8 e^6}+\frac{(b d-a e)^3 (5 b B d-4 A b e-a B e) (d+e x)^9}{9 e^6}-\frac{b (b d-a e)^2 (5 b B d-3 A b e-2 a B e) (d+e x)^{10}}{5 e^6}+\frac{2 b^2 (b d-a e) (5 b B d-2 A b e-3 a B e) (d+e x)^{11}}{11 e^6}-\frac{b^3 (5 b B d-A b e-4 a B e) (d+e x)^{12}}{12 e^6}+\frac{b^4 B (d+e x)^{13}}{13 e^6}$$

Result (type 1, 823 leaves):

$$a^4 A d^7 x+\frac{1}{2} a^3 d^6 (4 A b d+a B d+7 a A e) x^2+\frac{1}{3} a^2 d^5 \left(a B d (4 b d+7 a e)+A \left(6 b^2 d^2+28 a b d e+21 a^2 e^2\right)\right) x^3+\frac{1}{4} a d^4 \left(a B d \left(6 b^2 d^2+28 a b d e+21 a^2 e^2\right)+A \left(4 b^3 d^3+42 a b^2 d^2 e+84 a^2 b d e^2+35 a^3 e^3\right)\right) x^4+\frac{1}{5} d^3 \left(a B d \left(4 b^3 d^3+42 a b^2 d^2 e+84 a^2 b d e^2+35 a^3 e^3\right)+A \left(b^4 d^4+28 a b^3 d^3 e+126 a^2 b^2 d^2 e^2+140 a^3 b d e^3+35 a^4 e^4\right)\right) x^5+\frac{1}{6} d^2 \left(140 a^3 b d e^3 (B d+A e)+28 a b^3 d^3 e (B d+3 A e)+7 a^4 e^4 (5 B d+3 A e)+42 a^2 b^2 d^2 e^2 (3 B d+5 A e)+b^4 d^4 (B d+7 A e)\right) x^6+d e \left(30 a^2 b^2 d^2 e^2 (B d+A e)+a^4 e^4 (3 B d+A e)+b^4 d^4 (B d+3 A e)+4 a^3 b d e^3 (5 B d+3 A e)+4 a b^3 d^3 e (3 B d+5 A e)\right) x^7+\frac{1}{8} e^2 \left(140 a b^3 d^3 e (B d+A e)+28 a^3 b d e^3 (3 B d+A e)+a^4 e^4 (7 B d+A e)+42 a^2 b^2 d^2 e^2 (5 B d+3 A e)+7 b^4 d^4 (3 B d+5 A e)\right) x^8+\frac{1}{9} e^3 \left(a^4 B e^4+35 b^4 d^3 (B d+A e)+42 a^2 b^2 d e^2 (3 B d+A e)+4 a^3 b e^3 (7 B d+A e)+28 a b^3 d^2 e (5 B d+3 A e)\right) x^9+\frac{1}{10} b e^4 \left(4 a^3 B e^3+28 a b^2 d e (3 B d+A e)+6 a^2 b e^2 (7 B d+A e)+7 b^3 d^2 (5 B d+3 A e)\right) x^{10}+\frac{1}{11} b^2 e^5 \left(6 a^2 B e^2+7 b^2 d (3 B d+A e)+4 a b e (7 B d+A e)\right) x^{11}+\frac{1}{12} b^3 e^6 (7 b B d+A b e+4 a B e) x^{12}+\frac{1}{13} b^4 B e^7 x^{13}$$

Problem 1674: Result more than twice size of optimal antiderivative.

$$\int (A+B x) (d+e x)^6 \left(a^2+2 a b x+b^2 x^2\right)^2 \, dx$$

Optimal (type 1, 206 leaves, 3 steps):

$$-\frac{(b d-a e)^4 (B d-A e) (d+e x)^7}{7 e^6}+\frac{(b d-a e)^3 (5 b B d-4 A b e-a B e) (d+e x)^8}{8 e^6}-\frac{2 b (b d-a e)^2 (5 b B d-3 A b e-2 a B e) (d+e x)^9}{9 e^6}+\frac{b^2 (b d-a e) (5 b B d-2 A b e-3 a B e) (d+e x)^{10}}{5 e^6}-\frac{b^3 (5 b B d-A b e-4 a B e) (d+e x)^{11}}{11 e^6}+\frac{b^4 B (d+e x)^{12}}{12 e^6}$$

Result (type 1, 737 leaves):

$$a^4 A d^6 x+\frac{1}{2} a^3 d^5 (4 A b d+a B d+6 a A e) x^2+\frac{1}{3} a^2 d^4 \left(2 a B d (2 b d+3 a e)+3 A \left(2 b^2 d^2+8 a b d e+5 a^2 e^2\right)\right) x^3+\frac{1}{4} a d^3 \left(3 a B d \left(2 b^2 d^2+8 a b d e+5 a^2 e^2\right)+4 A \left(b^3 d^3+9 a b^2 d^2 e+15 a^2 b d e^2+5 a^3 e^3\right)\right) x^4+\frac{1}{5} d^2 \left(4 a B d \left(b^3 d^3+9 a b^2 d^2 e+15 a^2 b d e^2+5 a^3 e^3\right)+A \left(b^4 d^4+24 a b^3 d^3 e+90 a^2 b^2 d^2 e^2+80 a^3 b d e^3+15 a^4 e^4\right)\right) x^5+\frac{1}{6} d \left(3 a^4 e^4 (5 B d+2 A e)+20 a^3 b d e^3 (4 B d+3 A e)+30 a^2 b^2 d^2 e^2 (3 B d+4 A e)+12 a b^3 d^3 e (2 B d+5 A e)+b^4 d^4 (B d+6 A e)\right) x^6+\frac{1}{7} e \left(a^4 e^4 (6 B d+A e)+12 a^3 b d e^3 (5 B d+2 A e)+30 a^2 b^2 d^2 e^2 (4 B d+3 A e)+20 a b^3 d^3 e (3 B d+4 A e)+3 b^4 d^4 (2 B d+5 A e)\right) x^7+\frac{1}{8} e^2 \left(a^4 B e^4+4 a^3 b e^3 (6 B d+A e)+18 a^2 b^2 d e^2 (5 B d+2 A e)+20 a b^3 d^2 e (4 B d+3 A e)+5 b^4 d^3 (3 B d+4 A e)\right) x^8+\frac{1}{9} b e^3 \left(4 a^3 B e^3+6 a^2 b e^2 (6 B d+A e)+12 a b^2 d e (5 B d+2 A e)+5 b^3 d^2 (4 B d+3 A e)\right) x^9+\frac{1}{10} b^2 e^4 \left(6 a^2 B e^2+4 a b e (6 B d+A e)+3 b^2 d (5 B d+2 A e)\right) x^{10}+\frac{1}{11} b^3 e^5 (6 b B d+A b e+4 a B e) x^{11}+\frac{1}{12} b^4 B e^6 x^{12}$$

Problem 1675: Result more than twice size of optimal antiderivative.

$$\int (A+B x) (d+e x)^5 \left(a^2+2 a b x+b^2 x^2\right)^2 \, dx$$

Optimal (type 1, 206 leaves, 3 steps):

$$-\frac{(b d-a e)^4 (B d-A e) (d+e x)^6}{6 e^6}+\frac{(b d-a e)^3 (5 b B d-4 A b e-a B e) (d+e x)^7}{7 e^6}-\frac{b (b d-a e)^2 (5 b B d-3 A b e-2 a B e) (d+e x)^8}{4 e^6}+\frac{2 b^2 (b d-a e) (5 b B d-2 A b e-3 a B e) (d+e x)^9}{9 e^6}-\frac{b^3 (5 b B d-A b e-4 a B e) (d+e x)^{10}}{10 e^6}+\frac{b^4 B (d+e x)^{11}}{11 e^6}$$

Result (type 1, 615 leaves) :

$$a^4 A d^5 x+\frac{1}{2} a^3 d^4 (4 A b d+a B d+5 a A e) x^2+\frac{1}{3} a^2 d^3 \left(a B d (4 b d+5 a e)+2 A \left(3 b^2 d^2+10 a b d e+5 a^2 e^2\right)\right) x^3+\frac{1}{2} a d^2 \left(a B d \left(3 b^2 d^2+10 a b d e+5 a^2 e^2\right)+A \left(2 b^3 d^3+15 a b^2 d^2 e+20 a^2 b d e^2+5 a^3 e^3\right)\right) x^4+\frac{1}{5} d \left(2 a B d \left(2 b^3 d^3+15 a b^2 d^2 e+20 a^2 b d e^2+5 a^3 e^3\right)+A \left(b^4 d^4+20 a b^3 d^3 e+60 a^2 b^2 d^2 e^2+40 a^3 b d e^3+5 a^4 e^4\right)\right) x^5+\frac{1}{6} \left(60 a^2 b^2 d^2 e^2 (B d+A e)+20 a^3 b d e^3 (2 B d+A e)+a^4 e^4 (5 B d+A e)+20 a b^3 d^3 e (B d+2 A e)+b^4 d^4 (B d+5 A e)\right) x^6+\frac{1}{7} e \left(a^4 B e^4+40 a b^3 d^2 e (B d+A e)+30 a^2 b^2 d e^2 (2 B d+A e)+4 a^3 b e^3 (5 B d+A e)+5 b^4 d^3 (B d+2 A e)\right) x^7+\frac{1}{4} b e^2 \left(2 a^3 B e^3+5 b^3 d^2 (B d+A e)+10 a b^2 d e (2 B d+A e)+3 a^2 b e^2 (5 B d+A e)\right) x^8+\frac{1}{9} b^2 e^3 \left(6 a^2 B e^2+5 b^2 d (2 B d+A e)+4 a b e (5 B d+A e)\right) x^9+\frac{1}{10} b^3 e^4 (5 b B d+A b e+4 a B e) x^{10}+\frac{1}{11} b^4 B e^5 x^{11}$$

Problem 1676: Result more than twice size of optimal antiderivative.

$$\int (A+B x) (d+e x)^4 \left(a^2+2 a b x+b^2 x^2\right)^2 \, dx$$

Optimal (type 1, 204 leaves, 3 steps) :

$$\frac{(A b-a B)\ (b d-a e)^4\ (a+b x)^5}{5 b^6}+\frac{(b d-a e)^3\ (b B d+4 A b e-5 a B e)\ (a+b x)^6}{6 b^6}+\frac{2 e\ (b d-a e)^2\ (2 b B d+3 A b e-5 a B e)\ (a+b x)^7}{7 b^6}+\frac{e^2\ (b d-a e)\ (3 b B d+2 A b e-5 a B e)\ (a+b x)^8}{4 b^6}+\frac{e^3\ (4 b B d+A b e-5 a B e)\ (a+b x)^9}{9 b^6}+\frac{B e^4\ (a+b x)^{10}}{10 b^6}$$

Result (type 1, 512 leaves):

$$a^4 A d^4 x+\frac{1}{2} a^3 d^3\ (a B d+4 A\ (b d+a e))\ x^2+\frac{2}{3} a^2 d^2\ \left(2 a B d\ (b d+a e)+A\ \left(3 b^2 d^2+8 a b d e+3 a^2 e^2\right)\right)\ x^3+\frac{1}{2} a d\ \left(a B d\ \left(3 b^2 d^2+8 a b d e+3 a^2 e^2\right)+2 A\ \left(b^3 d^3+6 a b^2 d^2 e+6 a^2 b d e^2+a^3 e^3\right)\right)\ x^4+\frac{1}{5}\ \left(4 a B d\ \left(b^3 d^3+6 a b^2 d^2 e+6 a^2 b d e^2+a^3 e^3\right)+A\ \left(b^4 d^4+16 a b^3 d^3 e+36 a^2 b^2 d^2 e^2+16 a^3 b d e^3+a^4 e^4\right)\right)\ x^5+\frac{1}{6}\ \left(a^4 B e^4+4 a^3 b e^3\ (4 B d+A e)+12 a^2 b^2 d e^2\ (3 B d+2 A e)+8 a b^3 d^2 e\ (2 B d+3 A e)+b^4 d^3\ (B d+4 A e)\right)\ x^6+\frac{2}{7} b e\ \left(2 a^3 B e^3+3 a^2 b e^2\ (4 B d+A e)+4 a b^2 d e\ (3 B d+2 A e)+b^3 d^2\ (2 B d+3 A e)\right)\ x^7+\frac{1}{4} b^2 e^2\ \left(3 a^2 B e^2+2 a b e\ (4 B d+A e)+b^2 d\ (3 B d+2 A e)\right)\ x^8+\frac{1}{9} b^3 e^3\ (4 b B d+A b e+4 a B e)\ x^9+\frac{1}{10} b^4 B e^4 x^{10}$$

Problem 1677: Result more than twice size of optimal antiderivative.

$$\int (A+B x)\ (d+e x)^3\ \left(a^2+2 a b x+b^2 x^2\right)^2 dx$$

Optimal (type 1, 159 leaves, 3 steps):

$$\frac{(A b-a B)\ (b d-a e)^3\ (a+b x)^5}{5 b^5}+\frac{(b d-a e)^2\ (b B d+3 A b e-4 a B e)\ (a+b x)^6}{6 b^5}+\frac{3 e\ (b d-a e)\ (b B d+A b e-2 a B e)\ (a+b x)^7}{7 b^5}+\frac{e^2\ (3 b B d+A b e-4 a B e)\ (a+b x)^8}{8 b^5}+\frac{B e^3\ (a+b x)^9}{9 b^5}$$

Result (type 1, 402 leaves):

$$a^4 A d^3 x + \frac{1}{2} a^3 d^2 \left(4 A b d + a B d + 3 a A e\right) x^2 +$$
$$\frac{1}{3} a^2 d \left(a B d \left(4 b d + 3 a e\right) + 3 A \left(2 b^2 d^2 + 4 a b d e + a^2 e^2\right)\right) x^3 +$$
$$\frac{1}{4} a \left(3 a B d \left(2 b^2 d^2 + 4 a b d e + a^2 e^2\right) + A \left(4 b^3 d^3 + 18 a b^2 d^2 e + 12 a^2 b d e^2 + a^3 e^3\right)\right) x^4 +$$
$$\frac{1}{5} \left(a B \left(4 b^3 d^3 + 18 a b^2 d^2 e + 12 a^2 b d e^2 + a^3 e^3\right) + A b \left(b^3 d^3 + 12 a b^2 d^2 e + 18 a^2 b d e^2 + 4 a^3 e^3\right)\right) x^5 +$$
$$\frac{1}{6} b \left(4 a^3 B e^3 + 12 a b^2 d e \left(B d + A e\right) + 6 a^2 b e^2 \left(3 B d + A e\right) + b^3 d^2 \left(B d + 3 A e\right)\right) x^6 +$$
$$\frac{1}{7} b^2 e \left(6 a^2 B e^2 + 3 b^2 d \left(B d + A e\right) + 4 a b e \left(3 B d + A e\right)\right) x^7 +$$
$$\frac{1}{8} b^3 e^2 \left(3 b B d + A b e + 4 a B e\right) x^8 + \frac{1}{9} b^4 B e^3 x^9$$

Problem 1678: Result more than twice size of optimal antiderivative.

$$\int (A + B x) \left(d + e x\right)^2 \left(a^2 + 2 a b x + b^2 x^2\right)^2 \, dx$$

Optimal (type 1, 118 leaves, 3 steps):

$$\frac{\left(A b - a B\right) \left(b d - a e\right)^2 \left(a + b x\right)^5}{5 b^4} + \frac{\left(b d - a e\right) \left(b B d + 2 A b e - 3 a B e\right) \left(a + b x\right)^6}{6 b^4} +$$
$$\frac{e \left(2 b B d + A b e - 3 a B e\right) \left(a + b x\right)^7}{7 b^4} + \frac{B e^2 \left(a + b x\right)^8}{8 b^4}$$

Result (type 1, 288 leaves):

$$a^4 A d^2 x + \frac{1}{2} a^3 d \left(4 A b d + a B d + 2 a A e\right) x^2 +$$
$$\frac{1}{3} a^2 \left(2 a B d \left(2 b d + a e\right) + A \left(6 b^2 d^2 + 8 a b d e + a^2 e^2\right)\right) x^3 +$$
$$\frac{1}{4} a \left(4 A b \left(b^2 d^2 + 3 a b d e + a^2 e^2\right) + a B \left(6 b^2 d^2 + 8 a b d e + a^2 e^2\right)\right) x^4 +$$
$$\frac{1}{5} b \left(4 a B \left(b^2 d^2 + 3 a b d e + a^2 e^2\right) + A b \left(b^2 d^2 + 8 a b d e + 6 a^2 e^2\right)\right) x^5 +$$
$$\frac{1}{6} b^2 \left(6 a^2 B e^2 + 4 a b e \left(2 B d + A e\right) + b^2 d \left(B d + 2 A e\right)\right) x^6 +$$
$$\frac{1}{7} b^3 e \left(2 b B d + A b e + 4 a B e\right) x^7 + \frac{1}{8} b^4 B e^2 x^8$$

Problem 1679: Result more than twice size of optimal antiderivative.

$$\int (A + B x) \left(d + e x\right) \left(a^2 + 2 a b x + b^2 x^2\right)^2 \, dx$$

Optimal (type 1, 75 leaves, 3 steps):

$$\frac{(A b - a B)\ (b d - a e)\ (a + b x)^5}{5 b^3} + \frac{(b B d + A b e - 2 a B e)\ (a + b x)^6}{6 b^3} + \frac{B e\ (a + b x)^7}{7 b^3}$$

Result (type 1, 172 leaves):

$$a^4 A d x + \frac{1}{2} a^3\ (4 A b d + a B d + a A e)\ x^2 + \frac{1}{3} a^2\ (a B\ (4 b d + a e) + 2 A b\ (3 b d + 2 a e))\ x^3 + \frac{1}{2} a b\ (a B\ (3 b d + 2 a e) + A b\ (2 b d + 3 a e))\ x^4 + \frac{1}{5} b^2\ (2 a B\ (2 b d + 3 a e) + A b\ (b d + 4 a e))\ x^5 + \frac{1}{6} b^3\ (b B d + A b e + 4 a B e)\ x^6 + \frac{1}{7} b^4 B e x^7$$

Problem 1680: Result more than twice size of optimal antiderivative.

$$\int (A + B x)\ (a^2 + 2 a b x + b^2 x^2)^2\, dx$$

Optimal (type 1, 38 leaves, 3 steps):

$$\frac{(A b - a B)\ (a + b x)^5}{5 b^2} + \frac{B\ (a + b x)^6}{6 b^2}$$

Result (type 1, 84 leaves):

$$\frac{1}{30} x\ (15 a^4\ (2 A + B x) + 20 a^3 b x\ (3 A + 2 B x) + 15 a^2 b^2 x^2\ (4 A + 3 B x) + 6 a b^3 x^3\ (5 A + 4 B x) + b^4 x^4\ (6 A + 5 B x))$$

Problem 1686: Result more than twice size of optimal antiderivative.

$$\int \frac{(A + B x)\ (a^2 + 2 a b x + b^2 x^2)^2}{(d + e x)^6}\, dx$$

Optimal (type 3, 155 leaves, 4 steps):

$$-\frac{(B d - A e)\ (a + b x)^5}{5 e\ (b d - a e)\ (d + e x)^5} - \frac{B\ (b d - a e)^4}{4 e^6\ (d + e x)^4} + \frac{4 b B\ (b d - a e)^3}{3 e^6\ (d + e x)^3} - \frac{3 b^2 B\ (b d - a e)^2}{e^6\ (d + e x)^2} + \frac{4 b^3 B\ (b d - a e)}{e^6\ (d + e x)} + \frac{b^4 B \operatorname{Log}[d + e x]}{e^6}$$

Result (type 3, 332 leaves):

$$\frac{1}{60 e^6\ (d + e x)^5} \Big(-3 a^4 e^4\ (4 A e + B\ (d + 5 e x)) - 4 a^3 b e^3\ (3 A e\ (d + 5 e x) + 2 B\ (d^2 + 5 d e x + 10 e^2 x^2)) - 6 a^2 b^2 e^2\ (2 A e\ (d^2 + 5 d e x + 10 e^2 x^2) + 3 B\ (d^3 + 5 d^2 e x + 10 d e^2 x^2 + 10 e^3 x^3)) - 12 a b^3 e\ (A e\ (d^3 + 5 d^2 e x + 10 d e^2 x^2 + 10 e^3 x^3) + 4 B\ (d^4 + 5 d^3 e x + 10 d^2 e^2 x^2 + 10 d e^3 x^3 + 5 e^4 x^4)) + b^4\ (-12 A e\ (d^4 + 5 d^3 e x + 10 d^2 e^2 x^2 + 10 d e^3 x^3 + 5 e^4 x^4) + B d\ (137 d^4 + 625 d^3 e x + 1100 d^2 e^2 x^2 + 900 d e^3 x^3 + 300 e^4 x^4)) + 60 b^4 B\ (d + e x)^5 \operatorname{Log}[d + e x]\Big)$$

Problem 1687: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B x)\left(a^2+2 a b x+b^2 x^2\right)^2}{(d+e x)^7}\,dx$$

Optimal (type 1, 86 leaves, 3 steps):

$$-\frac{(B d-A e)(a+b x)^5}{6 e (b d-a e)(d+e x)^6}+\frac{(5 b B d+A b e-6 a B e)(a+b x)^5}{30 e (b d-a e)^2 (d+e x)^5}$$

Result (type 1, 317 leaves):

$$-\frac{1}{30 e^6 (d+e x)^6}\Big(a^4 e^4 (5 A e+B (d+6 e x))+2 a^3 b e^3 \left(2 A e (d+6 e x)+B \left(d^2+6 d e x+15 e^2 x^2\right)\right)+3 a^2 b^2 e^2 \left(A e \left(d^2+6 d e x+15 e^2 x^2\right)+B \left(d^3+6 d^2 e x+15 d e^2 x^2+20 e^3 x^3\right)\right)+2 a b^3 e \left(A e \left(d^3+6 d^2 e x+15 d e^2 x^2+20 e^3 x^3\right)+2 B \left(d^4+6 d^3 e x+15 d^2 e^2 x^2+20 d e^3 x^3+15 e^4 x^4\right)\right)+b^4 \left(A e \left(d^4+6 d^3 e x+15 d^2 e^2 x^2+20 d e^3 x^3+15 e^4 x^4\right)+5 B \left(d^5+6 d^4 e x+15 d^3 e^2 x^2+20 d^2 e^3 x^3+15 d e^4 x^4+6 e^5 x^5\right)\right)\Big)$$

Problem 1688: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B x)\left(a^2+2 a b x+b^2 x^2\right)^2}{(d+e x)^8}\,dx$$

Optimal (type 1, 135 leaves, 4 steps):

$$-\frac{(B d-A e)(a+b x)^5}{7 e (b d-a e)(d+e x)^7}+\frac{(5 b B d+2 A b e-7 a B e)(a+b x)^5}{42 e (b d-a e)^2 (d+e x)^6}+\frac{b (5 b B d+2 A b e-7 a B e)(a+b x)^5}{210 e (b d-a e)^3 (d+e x)^5}$$

Result (type 1, 323 leaves):

$$-\frac{1}{210 e^6 (d+e x)^7}\Big(5 a^4 e^4 (6 A e+B (d+7 e x))+4 a^3 b e^3 \left(5 A e (d+7 e x)+2 B \left(d^2+7 d e x+21 e^2 x^2\right)\right)+3 a^2 b^2 e^2 \left(4 A e \left(d^2+7 d e x+21 e^2 x^2\right)+3 B \left(d^3+7 d^2 e x+21 d e^2 x^2+35 e^3 x^3\right)\right)+2 a b^3 e \left(3 A e \left(d^3+7 d^2 e x+21 d e^2 x^2+35 e^3 x^3\right)+4 B \left(d^4+7 d^3 e x+21 d^2 e^2 x^2+35 d e^3 x^3+35 e^4 x^4\right)\right)+b^4 \left(2 A e \left(d^4+7 d^3 e x+21 d^2 e^2 x^2+35 d e^3 x^3+35 e^4 x^4\right)+5 B \left(d^5+7 d^4 e x+21 d^3 e^2 x^2+35 d^2 e^3 x^3+35 d e^4 x^4+21 e^5 x^5\right)\right)\Big)$$

Problem 1731: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B x)\left(a^2+2 a b x+b^2 x^2\right)^{3/2}}{(d+e x)^6}\,dx$$

Optimal (type 2, 106 leaves, 3 steps):

$$\frac{(A b - a B)\,(a + b x)^3 \sqrt{a^2 + 2 a b x + b^2 x^2}}{4\,(b d - a e)^2\,(d + e x)^4} + \frac{(B d - A e)\,(a^2 + 2 a b x + b^2 x^2)^{5/2}}{5\,(b d - a e)^2\,(d + e x)^5}$$

Result (type 2, 229 leaves):

$$-\Big(\Big(\sqrt{(a + b x)^2}\,\big(a^3 e^3\,(4 A e + B\,(d + 5 e x)) + a^2 b e^2\,(3 A e\,(d + 5 e x) + 2 B\,(d^2 + 5 d e x + 10 e^2 x^2)) + a b^2 e\,(2 A e\,(d^2 + 5 d e x + 10 e^2 x^2) + 3 B\,(d^3 + 5 d^2 e x + 10 d e^2 x^2 + 10 e^3 x^3)) + b^3\,(A e\,(d^3 + 5 d^2 e x + 10 d e^2 x^2 + 10 e^3 x^3) + 4 B\,(d^4 + 5 d^3 e x + 10 d^2 e^2 x^2 + 10 d e^3 x^3 + 5 e^4 x^4))\big)\Big)\Big/\Big(20 e^5\,(a + b x)\,(d + e x)^5\Big)\Big)$$

Problem 1738: Result more than twice size of optimal antiderivative.

$$\int (A + B x)\,(d + e x)^6\,(a^2 + 2 a b x + b^2 x^2)^{5/2}\,dx$$

Optimal (type 2, 436 leaves, 3 steps):

$$\frac{(b d - a e)^5\,(B d - A e)\,(d + e x)^7 \sqrt{a^2 + 2 a b x + b^2 x^2}}{7 e^7\,(a + b x)} - \frac{(b d - a e)^4\,(6 b B d - 5 A b e - a B e)\,(d + e x)^8 \sqrt{a^2 + 2 a b x + b^2 x^2}}{8 e^7\,(a + b x)} + \frac{5 b\,(b d - a e)^3\,(3 b B d - 2 A b e - a B e)\,(d + e x)^9 \sqrt{a^2 + 2 a b x + b^2 x^2}}{9 e^7\,(a + b x)} - \frac{b^2\,(b d - a e)^2\,(2 b B d - A b e - a B e)\,(d + e x)^{10} \sqrt{a^2 + 2 a b x + b^2 x^2}}{e^7\,(a + b x)} + \frac{5 b^3\,(b d - a e)\,(3 b B d - A b e - 2 a B e)\,(d + e x)^{11} \sqrt{a^2 + 2 a b x + b^2 x^2}}{11 e^7\,(a + b x)} - \frac{b^4\,(6 b B d - A b e - 5 a B e)\,(d + e x)^{12} \sqrt{a^2 + 2 a b x + b^2 x^2}}{12 e^7\,(a + b x)} + \frac{b^5 B\,(d + e x)^{13} \sqrt{a^2 + 2 a b x + b^2 x^2}}{13 e^7\,(a + b x)}$$

Result (type 2, 876 leaves):

$$\frac{1}{72072\,(a+b\,x)}\,x\,\sqrt{(a+b\,x)^2}\,\Big(1287\,a^5\,\big(8\,A\,(7\,d^6+21\,d^5\,e\,x+35\,d^4\,e^2\,x^2+35\,d^3\,e^3\,x^3+21\,d^2\,e^4\,x^4+7\,d\,e^5\,x^5+e^6\,x^6)+B\,x\,(28\,d^6+112\,d^5\,e\,x+210\,d^4\,e^2\,x^2+224\,d^3\,e^3\,x^3+140\,d^2\,e^4\,x^4+48\,d\,e^5\,x^5+7\,e^6\,x^6)\big)+715\,a^4\,b\,x\,\big(9\,A\,(28\,d^6+112\,d^5\,e\,x+210\,d^4\,e^2\,x^2+224\,d^3\,e^3\,x^3+140\,d^2\,e^4\,x^4+48\,d\,e^5\,x^5+7\,e^6\,x^6)+2\,B\,x\,(84\,d^6+378\,d^5\,e\,x+756\,d^4\,e^2\,x^2+840\,d^3\,e^3\,x^3+540\,d^2\,e^4\,x^4+189\,d\,e^5\,x^5+28\,e^6\,x^6)\big)+286\,a^3\,b^2\,x^2\,\big(10\,A\,(84\,d^6+378\,d^5\,e\,x+756\,d^4\,e^2\,x^2+840\,d^3\,e^3\,x^3+540\,d^2\,e^4\,x^4+189\,d\,e^5\,x^5+28\,e^6\,x^6)+3\,B\,x\,(210\,d^6+1008\,d^5\,e\,x+2100\,d^4\,e^2\,x^2+2400\,d^3\,e^3\,x^3+1575\,d^2\,e^4\,x^4+560\,d\,e^5\,x^5+84\,e^6\,x^6)\big)+78\,a^2\,b^3\,x^3\,\big(11\,A\,(210\,d^6+1008\,d^5\,e\,x+2100\,d^4\,e^2\,x^2+2400\,d^3\,e^3\,x^3+1575\,d^2\,e^4\,x^4+560\,d\,e^5\,x^5+84\,e^6\,x^6)+4\,B\,x\,(462\,d^6+2310\,d^5\,e\,x+4950\,d^4\,e^2\,x^2+5775\,d^3\,e^3\,x^3+3850\,d^2\,e^4\,x^4+1386\,d\,e^5\,x^5+210\,e^6\,x^6)\big)+13\,a\,b^4\,x^4\,\big(12\,A\,(462\,d^6+2310\,d^5\,e\,x+4950\,d^4\,e^2\,x^2+5775\,d^3\,e^3\,x^3+3850\,d^2\,e^4\,x^4+1386\,d\,e^5\,x^5+210\,e^6\,x^6)+5\,B\,x\,(924\,d^6+4752\,d^5\,e\,x+10\,395\,d^4\,e^2\,x^2+12\,320\,d^3\,e^3\,x^3+8316\,d^2\,e^4\,x^4+3024\,d\,e^5\,x^5+462\,e^6\,x^6)\big)+b^5\,x^5\,\big(13\,A\,(924\,d^6+4752\,d^5\,e\,x+10\,395\,d^4\,e^2\,x^2+12\,320\,d^3\,e^3\,x^3+8316\,d^2\,e^4\,x^4+3024\,d\,e^5\,x^5+462\,e^6\,x^6)+6\,B\,x\,(1716\,d^6+9009\,d^5\,e\,x+20\,020\,d^4\,e^2\,x^2+24\,024\,d^3\,e^3\,x^3+16\,380\,d^2\,e^4\,x^4+6006\,d\,e^5\,x^5+924\,e^6\,x^6)\big)\Big)$$

Problem 1752: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B\,x)\,(a^2+2\,a\,b\,x+b^2\,x^2)^{5/2}}{(d+e\,x)^8}\,dx$$

Optimal (type 2, 106 leaves, 3 steps):

$$\frac{(A\,b-a\,B)\,(a+b\,x)^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{6\,(b\,d-a\,e)^2\,(d+e\,x)^6}+\frac{(B\,d-A\,e)\,(a^2+2\,a\,b\,x+b^2\,x^2)^{7/2}}{7\,(b\,d-a\,e)^2\,(d+e\,x)^7}$$

Result (type 2, 465 leaves):

$$-\frac{1}{42\,e^7\,(a+b\,x)\,(d+e\,x)^7}\sqrt{(a+b\,x)^2}\,\Big(a^5\,e^5\,(6\,A\,e+B\,(d+7\,e\,x))+a^4\,b\,e^4\,(5\,A\,e\,(d+7\,e\,x)+2\,B\,(d^2+7\,d\,e\,x+21\,e^2\,x^2))+a^3\,b^2\,e^3\,(4\,A\,e\,(d^2+7\,d\,e\,x+21\,e^2\,x^2)+3\,B\,(d^3+7\,d^2\,e\,x+21\,d\,e^2\,x^2+35\,e^3\,x^3))+a^2\,b^3\,e^2\,(3\,A\,e\,(d^3+7\,d^2\,e\,x+21\,d\,e^2\,x^2+35\,e^3\,x^3)+4\,B\,(d^4+7\,d^3\,e\,x+21\,d^2\,e^2\,x^2+35\,d\,e^3\,x^3+35\,e^4\,x^4))+a\,b^4\,e\,(2\,A\,e\,(d^4+7\,d^3\,e\,x+21\,d^2\,e^2\,x^2+35\,d\,e^3\,x^3+35\,e^4\,x^4)+5\,B\,(d^5+7\,d^4\,e\,x+21\,d^3\,e^2\,x^2+35\,d^2\,e^3\,x^3+35\,d\,e^4\,x^4+21\,e^5\,x^5))+b^5\,(A\,e\,(d^5+7\,d^4\,e\,x+21\,d^3\,e^2\,x^2+35\,d^2\,e^3\,x^3+35\,d\,e^4\,x^4+21\,e^5\,x^5)+6\,B\,(d^6+7\,d^5\,e\,x+21\,d^4\,e^2\,x^2+35\,d^3\,e^3\,x^3+35\,d^2\,e^4\,x^4+21\,d\,e^5\,x^5+7\,e^6\,x^6))\Big)$$

Problem 1753: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B\,x)\,(a^2+2\,a\,b\,x+b^2\,x^2)^{5/2}}{(d+e\,x)^9}\,dx$$

Optimal (type 2, 193 leaves, 4 steps):

$$-\frac{(B d-A e)\,(a+b x)^5\sqrt{a^2+2 a b x+b^2 x^2}}{8 e\,(b d-a e)\,(d+e x)^8}+\frac{(3 b B d+A b e-4 a B e)\,(a+b x)^5\sqrt{a^2+2 a b x+b^2 x^2}}{28 e\,(b d-a e)^2\,(d+e x)^7}+\frac{b\,(3 b B d+A b e-4 a B e)\,(a+b x)^5\sqrt{a^2+2 a b x+b^2 x^2}}{168 e\,(b d-a e)^3\,(d+e x)^6}$$

Result (type 2, 466 leaves) :

$$-\frac{1}{168 e^7\,(a+b x)\,(d+e x)^8}\sqrt{(a+b x)^2}\,\Big(3 a^5 e^5\,(7 A e+B\,(d+8 e x))+5 a^4 b e^4\,\big(3 A e\,(d+8 e x)+B\,(d^2+8 d e x+28 e^2 x^2)\big)+2 a^3 b^2 e^3\,\big(5 A e\,(d^2+8 d e x+28 e^2 x^2)+3 B\,(d^3+8 d^2 e x+28 d e^2 x^2+56 e^3 x^3)\big)+6 a^2 b^3 e^2\,\big(A e\,(d^3+8 d^2 e x+28 d e^2 x^2+56 e^3 x^3)+B\,(d^4+8 d^3 e x+28 d^2 e^2 x^2+56 d e^3 x^3+70 e^4 x^4)\big)+a b^4 e\,\big(3 A e\,(d^4+8 d^3 e x+28 d^2 e^2 x^2+56 d e^3 x^3+70 e^4 x^4)+5 B\,(d^5+8 d^4 e x+28 d^3 e^2 x^2+56 d^2 e^3 x^3+70 d e^4 x^4+56 e^5 x^5)\big)+b^5\,\big(A e\,(d^5+8 d^4 e x+28 d^3 e^2 x^2+56 d^2 e^3 x^3+70 d e^4 x^4+56 e^5 x^5)+3 B\,(d^6+8 d^5 e x+28 d^4 e^2 x^2+56 d^3 e^3 x^3+70 d^2 e^4 x^4+56 d e^5 x^5+28 e^6 x^6)\big)\Big)$$

Problem 1800: Result more than twice size of optimal antiderivative.

$$\int (A+B x)\,(d+e x)^{7/2}\,(a^2+2 a b x+b^2 x^2)^3\,dx$$

Optimal (type 2, 308 leaves, 3 steps) :

$$-\frac{2\,(b d-a e)^6\,(B d-A e)\,(d+e x)^{9/2}}{9 e^8}+\frac{2\,(b d-a e)^5\,(7 b B d-6 A b e-a B e)\,(d+e x)^{11/2}}{11 e^8}-\frac{6 b\,(b d-a e)^4\,(7 b B d-5 A b e-2 a B e)\,(d+e x)^{13/2}}{13 e^8}+\frac{2 b^2\,(b d-a e)^3\,(7 b B d-4 A b e-3 a B e)\,(d+e x)^{15/2}}{3 e^8}-\frac{10 b^3\,(b d-a e)^2\,(7 b B d-3 A b e-4 a B e)\,(d+e x)^{17/2}}{17 e^8}+\frac{6 b^4\,(b d-a e)\,(7 b B d-2 A b e-5 a B e)\,(d+e x)^{19/2}}{19 e^8}-\frac{2 b^5\,(7 b B d-A b e-6 a B e)\,(d+e x)^{21/2}}{21 e^8}+\frac{2 b^6 B\,(d+e x)^{23/2}}{23 e^8}$$

Result (type 2, 628 leaves) :

$$\frac{1}{66\,927\,861\,e^8} 2\,(d+e\,x)^{9/2}\,\Big(676\,039\,a^6\,e^6\,(-2\,B\,d+11\,A\,e+9\,B\,e\,x)+$$
$$312\,018\,a^5\,b\,e^5\,\big(13\,A\,e\,(-2\,d+9\,e\,x)+B\,(8\,d^2-36\,d\,e\,x+99\,e^2\,x^2)\big)-$$
$$156\,009\,a^4\,b^2\,e^4\,\big(-5\,A\,e\,(8\,d^2-36\,d\,e\,x+99\,e^2\,x^2)+B\,(16\,d^3-72\,d^2\,e\,x+198\,d\,e^2\,x^2-429\,e^3\,x^3)\big)+$$
$$12\,236\,a^3\,b^3\,e^3\,\big(17\,A\,e\,(-16\,d^3+72\,d^2\,e\,x-198\,d\,e^2\,x^2+429\,e^3\,x^3)+$$
$$B\,(128\,d^4-576\,d^3\,e\,x+1584\,d^2\,e^2\,x^2-3432\,d\,e^3\,x^3+6435\,e^4\,x^4)\big)-$$
$$483\,a^2\,b^4\,e^2\,\big(-19\,A\,e\,(128\,d^4-576\,d^3\,e\,x+1584\,d^2\,e^2\,x^2-3432\,d\,e^3\,x^3+6435\,e^4\,x^4)+$$
$$5\,B\,(256\,d^5-1152\,d^4\,e\,x+3168\,d^3\,e^2\,x^2-6864\,d^2\,e^3\,x^3+12\,870\,d\,e^4\,x^4-21\,879\,e^5\,x^5)\big)+$$
$$138\,a\,b^5\,e\,\big(7\,A\,e\,(-256\,d^5+1152\,d^4\,e\,x-3168\,d^3\,e^2\,x^2+6864\,d^2\,e^3\,x^3-12\,870\,d\,e^4\,x^4+21\,879\,e^5\,x^5)+$$
$$B\,(1024\,d^6-4608\,d^5\,e\,x+12\,672\,d^4\,e^2\,x^2-27\,456\,d^3\,e^3\,x^3+$$
$$51\,480\,d^2\,e^4\,x^4-87\,516\,d\,e^5\,x^5+138\,567\,e^6\,x^6)\big)+$$
$$b^6\,\big(23\,A\,e\,(1024\,d^6-4608\,d^5\,e\,x+12\,672\,d^4\,e^2\,x^2-27\,456\,d^3\,e^3\,x^3+51\,480\,d^2\,e^4\,x^4-$$
$$87\,516\,d\,e^5\,x^5+138\,567\,e^6\,x^6)-7\,B\,(2048\,d^7-9216\,d^6\,e\,x+25\,344\,d^5\,e^2\,x^2-$$
$$54\,912\,d^4\,e^3\,x^3+102\,960\,d^3\,e^4\,x^4-175\,032\,d^2\,e^5\,x^5+277\,134\,d\,e^6\,x^6-415\,701\,e^7\,x^7)\big)\Big)$$

Problem 1801: Result more than twice size of optimal antiderivative.

$$\int (A+B\,x)\,(d+e\,x)^{5/2}\,(a^2+2\,a\,b\,x+b^2\,x^2)^3\,dx$$

Optimal (type 2, 308 leaves, 3 steps):

$$-\frac{2\,(b\,d-a\,e)^6\,(B\,d-A\,e)\,(d+e\,x)^{7/2}}{7\,e^8}+\frac{2\,(b\,d-a\,e)^5\,(7\,b\,B\,d-6\,A\,b\,e-a\,B\,e)\,(d+e\,x)^{9/2}}{9\,e^8}-$$
$$\frac{6\,b\,(b\,d-a\,e)^4\,(7\,b\,B\,d-5\,A\,b\,e-2\,a\,B\,e)\,(d+e\,x)^{11/2}}{11\,e^8}+$$
$$\frac{10\,b^2\,(b\,d-a\,e)^3\,(7\,b\,B\,d-4\,A\,b\,e-3\,a\,B\,e)\,(d+e\,x)^{13/2}}{13\,e^8}-$$
$$\frac{2\,b^3\,(b\,d-a\,e)^2\,(7\,b\,B\,d-3\,A\,b\,e-4\,a\,B\,e)\,(d+e\,x)^{15/2}}{3\,e^8}+$$
$$\frac{6\,b^4\,(b\,d-a\,e)\,(7\,b\,B\,d-2\,A\,b\,e-5\,a\,B\,e)\,(d+e\,x)^{17/2}}{17\,e^8}-$$
$$\frac{2\,b^5\,(7\,b\,B\,d-A\,b\,e-6\,a\,B\,e)\,(d+e\,x)^{19/2}}{19\,e^8}+\frac{2\,b^6\,B\,(d+e\,x)^{21/2}}{21\,e^8}$$

Result (type 2, 629 leaves):

$$\frac{1}{2909907\,e^8} 2\,(d+e\,x)^{7/2}\,\Big(46189\,a^6\,e^6\,(-2\,B\,d+9\,A\,e+7\,B\,e\,x)+25194\,a^5\,b\,e^5\,\big(11\,A\,e\,(-2\,d+7\,e\,x)+B\,(8\,d^2-28\,d\,e\,x+63\,e^2\,x^2)\big)-4845\,a^4\,b^2\,e^4\,\big(-13\,A\,e\,(8\,d^2-28\,d\,e\,x+63\,e^2\,x^2)+3\,B\,(16\,d^3-56\,d^2\,e\,x+126\,d\,e^2\,x^2-231\,e^3\,x^3)\big)+1292\,a^3\,b^3\,e^3\,\big(15\,A\,e\,(-16\,d^3+56\,d^2\,e\,x-126\,d\,e^2\,x^2+231\,e^3\,x^3)+B\,(128\,d^4-448\,d^3\,e\,x+1008\,d^2\,e^2\,x^2-1848\,d\,e^3\,x^3+3003\,e^4\,x^4)\big)-57\,a^2\,b^4\,e^2\,\big(-17\,A\,e\,(128\,d^4-448\,d^3\,e\,x+1008\,d^2\,e^2\,x^2-1848\,d\,e^3\,x^3+3003\,e^4\,x^4)+5\,B\,(256\,d^5-896\,d^4\,e\,x+2016\,d^3\,e^2\,x^2-3696\,d^2\,e^3\,x^3+6006\,d\,e^4\,x^4-9009\,e^5\,x^5)\big)+6\,a\,b^5\,e\,\big(19\,A\,e\,(-256\,d^5+896\,d^4\,e\,x-2016\,d^3\,e^2\,x^2+3696\,d^2\,e^3\,x^3-6006\,d\,e^4\,x^4+9009\,e^5\,x^5)+3\,B\,(1024\,d^6-3584\,d^5\,e\,x+8064\,d^4\,e^2\,x^2-14784\,d^3\,e^3\,x^3+24024\,d^2\,e^4\,x^4-36036\,d\,e^5\,x^5+51051\,e^6\,x^6)\big)+b^6\,\big(3\,A\,e\,(1024\,d^6-3584\,d^5\,e\,x+8064\,d^4\,e^2\,x^2-14784\,d^3\,e^3\,x^3+24024\,d^2\,e^4\,x^4-36036\,d\,e^5\,x^5+51051\,e^6\,x^6)+B\,(-2048\,d^7+7168\,d^6\,e\,x-16128\,d^5\,e^2\,x^2+29568\,d^4\,e^3\,x^3-48048\,d^3\,e^4\,x^4+72072\,d^2\,e^5\,x^5-102102\,d\,e^6\,x^6+138567\,e^7\,x^7)\big)\Big)$$

Problem 1802: Result more than twice size of optimal antiderivative.

$$\int (A+B\,x)\,(d+e\,x)^{3/2}\,(a^2+2\,a\,b\,x+b^2\,x^2)^3\,dx$$

Optimal (type 2, 308 leaves, 3 steps):

$$-\frac{2\,(b\,d-a\,e)^6\,(B\,d-A\,e)\,(d+e\,x)^{5/2}}{5\,e^8}+\frac{2\,(b\,d-a\,e)^5\,(7\,b\,B\,d-6\,A\,b\,e-a\,B\,e)\,(d+e\,x)^{7/2}}{7\,e^8}-\frac{2\,b\,(b\,d-a\,e)^4\,(7\,b\,B\,d-5\,A\,b\,e-2\,a\,B\,e)\,(d+e\,x)^{9/2}}{3\,e^8}+\frac{10\,b^2\,(b\,d-a\,e)^3\,(7\,b\,B\,d-4\,A\,b\,e-3\,a\,B\,e)\,(d+e\,x)^{11/2}}{11\,e^8}-\frac{10\,b^3\,(b\,d-a\,e)^2\,(7\,b\,B\,d-3\,A\,b\,e-4\,a\,B\,e)\,(d+e\,x)^{13/2}}{13\,e^8}+\frac{2\,b^4\,(b\,d-a\,e)\,(7\,b\,B\,d-2\,A\,b\,e-5\,a\,B\,e)\,(d+e\,x)^{15/2}}{5\,e^8}-\frac{2\,b^5\,(7\,b\,B\,d-A\,b\,e-6\,a\,B\,e)\,(d+e\,x)^{17/2}}{17\,e^8}+\frac{2\,b^6\,B\,(d+e\,x)^{19/2}}{19\,e^8}$$

Result (type 2, 629 leaves):

$$\frac{1}{4849845\,e^8}\,2\,(d+e\,x)^{5/2}\,\Big(138567\,a^6\,e^6\,(-2\,B\,d+7\,A\,e+5\,B\,e\,x)+$$
$$92378\,a^5\,b\,e^5\,\big(9\,A\,e\,(-2\,d+5\,e\,x)+B\,(8\,d^2-20\,d\,e\,x+35\,e^2\,x^2)\big)-$$
$$20995\,a^4\,b^2\,e^4\,\big(-11\,A\,e\,(8\,d^2-20\,d\,e\,x+35\,e^2\,x^2)+3\,B\,(16\,d^3-40\,d^2\,e\,x+70\,d\,e^2\,x^2-105\,e^3\,x^3)\big)+$$
$$6460\,a^3\,b^3\,e^3\,\big(13\,A\,e\,(-16\,d^3+40\,d^2\,e\,x-70\,d\,e^2\,x^2+105\,e^3\,x^3)+$$
$$B\,(128\,d^4-320\,d^3\,e\,x+560\,d^2\,e^2\,x^2-840\,d\,e^3\,x^3+1155\,e^4\,x^4)\big)-$$
$$1615\,a^2\,b^4\,e^2\,\big(-3\,A\,e\,(128\,d^4-320\,d^3\,e\,x+560\,d^2\,e^2\,x^2-840\,d\,e^3\,x^3+1155\,e^4\,x^4)+$$
$$B\,(256\,d^5-640\,d^4\,e\,x+1120\,d^3\,e^2\,x^2-1680\,d^2\,e^3\,x^3+2310\,d\,e^4\,x^4-3003\,e^5\,x^5)\big)+$$
$$38\,a\,b^5\,e\,\big(17\,A\,e\,(-256\,d^5+640\,d^4\,e\,x-1120\,d^3\,e^2\,x^2+1680\,d^2\,e^3\,x^3-2310\,d\,e^4\,x^4+3003\,e^5\,x^5)+$$
$$3\,B\,(1024\,d^6-2560\,d^5\,e\,x+4480\,d^4\,e^2\,x^2-6720\,d^3\,e^3\,x^3+$$
$$9240\,d^2\,e^4\,x^4-12012\,d\,e^5\,x^5+15015\,e^6\,x^6)\big)+$$
$$b^6\,\big(19\,A\,e\,(1024\,d^6-2560\,d^5\,e\,x+4480\,d^4\,e^2\,x^2-6720\,d^3\,e^3\,x^3+9240\,d^2\,e^4\,x^4-$$
$$12012\,d\,e^5\,x^5+15015\,e^6\,x^6)-7\,B\,(2048\,d^7-5120\,d^6\,e\,x+8960\,d^5\,e^2\,x^2-$$
$$13440\,d^4\,e^3\,x^3+18480\,d^3\,e^4\,x^4-24024\,d^2\,e^5\,x^5+30030\,d\,e^6\,x^6-36465\,e^7\,x^7)\big)\Big)$$

Problem 1803: Result more than twice size of optimal antiderivative.

$$\int (A+B\,x)\,\sqrt{d+e\,x}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^3\,dx$$

Optimal (type 2, 308 leaves, 3 steps):

$$-\frac{2\,(b\,d-a\,e)^6\,(B\,d-A\,e)\,(d+e\,x)^{3/2}}{3\,e^8}+\frac{2\,(b\,d-a\,e)^5\,(7\,b\,B\,d-6\,A\,b\,e-a\,B\,e)\,(d+e\,x)^{5/2}}{5\,e^8}-$$
$$\frac{6\,b\,(b\,d-a\,e)^4\,(7\,b\,B\,d-5\,A\,b\,e-2\,a\,B\,e)\,(d+e\,x)^{7/2}}{7\,e^8}+$$
$$\frac{10\,b^2\,(b\,d-a\,e)^3\,(7\,b\,B\,d-4\,A\,b\,e-3\,a\,B\,e)\,(d+e\,x)^{9/2}}{9\,e^8}-$$
$$\frac{10\,b^3\,(b\,d-a\,e)^2\,(7\,b\,B\,d-3\,A\,b\,e-4\,a\,B\,e)\,(d+e\,x)^{11/2}}{11\,e^8}+$$
$$\frac{6\,b^4\,(b\,d-a\,e)\,(7\,b\,B\,d-2\,A\,b\,e-5\,a\,B\,e)\,(d+e\,x)^{13/2}}{13\,e^8}-$$
$$\frac{2\,b^5\,(7\,b\,B\,d-A\,b\,e-6\,a\,B\,e)\,(d+e\,x)^{15/2}}{15\,e^8}+\frac{2\,b^6\,B\,(d+e\,x)^{17/2}}{17\,e^8}$$

Result (type 2, 628 leaves):

$$\frac{1}{765765\,e^8}\,2\,(d+e\,x)^{3/2}\,\Big(51051\,a^6\,e^6\,(-2\,B\,d+5\,A\,e+3\,B\,e\,x)+43758\,a^5\,b\,e^5\,\big(7\,A\,e\,(-2\,d+3\,e\,x)+B\,(8\,d^2-12\,d\,e\,x+15\,e^2\,x^2)\big)-36465\,a^4\,b^2\,e^4\,\big(-3\,A\,e\,(8\,d^2-12\,d\,e\,x+15\,e^2\,x^2)+B\,(16\,d^3-24\,d^2\,e\,x+30\,d\,e^2\,x^2-35\,e^3\,x^3)\big)+4420\,a^3\,b^3\,e^3\,\big(11\,A\,e\,(-16\,d^3+24\,d^2\,e\,x-30\,d\,e^2\,x^2+35\,e^3\,x^3)+B\,(128\,d^4-192\,d^3\,e\,x+240\,d^2\,e^2\,x^2-280\,d\,e^3\,x^3+315\,e^4\,x^4)\big)-255\,a^2\,b^4\,e^2\,\big(-13\,A\,e\,(128\,d^4-192\,d^3\,e\,x+240\,d^2\,e^2\,x^2-280\,d\,e^3\,x^3+315\,e^4\,x^4)+5\,B\,(256\,d^5-384\,d^4\,e\,x+480\,d^3\,e^2\,x^2-560\,d^2\,e^3\,x^3+630\,d\,e^4\,x^4-693\,e^5\,x^5)\big)+102\,a\,b^5\,e\,\big(5\,A\,e\,(-256\,d^5+384\,d^4\,e\,x-480\,d^3\,e^2\,x^2+560\,d^2\,e^3\,x^3-630\,d\,e^4\,x^4+693\,e^5\,x^5)+B\,(1024\,d^6-1536\,d^5\,e\,x+1920\,d^4\,e^2\,x^2-2240\,d^3\,e^3\,x^3+2520\,d^2\,e^4\,x^4-2772\,d\,e^5\,x^5+3003\,e^6\,x^6)\big)+b^6\,\big(17\,A\,e\,(1024\,d^6-1536\,d^5\,e\,x+1920\,d^4\,e^2\,x^2-2240\,d^3\,e^3\,x^3+2520\,d^2\,e^4\,x^4-2772\,d\,e^5\,x^5+3003\,e^6\,x^6)-7\,B\,(2048\,d^7-3072\,d^6\,e\,x+3840\,d^5\,e^2\,x^2-4480\,d^4\,e^3\,x^3+5040\,d^3\,e^4\,x^4-5544\,d^2\,e^5\,x^5+6006\,d\,e^6\,x^6-6435\,e^7\,x^7)\big)\Big)$$

Problem 1804: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B\,x)\,(a^2+2\,a\,b\,x+b^2\,x^2)^3}{\sqrt{d+e\,x}}\,dx$$

Optimal (type 2, 306 leaves, 3 steps):

$$-\frac{2\,(b\,d-a\,e)^6\,(B\,d-A\,e)\,\sqrt{d+e\,x}}{e^8}+\frac{2\,(b\,d-a\,e)^5\,(7\,b\,B\,d-6\,A\,b\,e-a\,B\,e)\,(d+e\,x)^{3/2}}{3\,e^8}-\frac{6\,b\,(b\,d-a\,e)^4\,(7\,b\,B\,d-5\,A\,b\,e-2\,a\,B\,e)\,(d+e\,x)^{5/2}}{5\,e^8}+\frac{10\,b^2\,(b\,d-a\,e)^3\,(7\,b\,B\,d-4\,A\,b\,e-3\,a\,B\,e)\,(d+e\,x)^{7/2}}{7\,e^8}-\frac{10\,b^3\,(b\,d-a\,e)^2\,(7\,b\,B\,d-3\,A\,b\,e-4\,a\,B\,e)\,(d+e\,x)^{9/2}}{9\,e^8}+\frac{6\,b^4\,(b\,d-a\,e)\,(7\,b\,B\,d-2\,A\,b\,e-5\,a\,B\,e)\,(d+e\,x)^{11/2}}{11\,e^8}-\frac{2\,b^5\,(7\,b\,B\,d-A\,b\,e-6\,a\,B\,e)\,(d+e\,x)^{13/2}}{13\,e^8}+\frac{2\,b^6\,B\,(d+e\,x)^{15/2}}{15\,e^8}$$

Result (type 2, 628 leaves):

$$\frac{1}{45045\,e^8} 2\sqrt{d+e\,x}\,\Big(15015\,a^6\,e^6\,\left(-2\,B\,d+3\,A\,e+B\,e\,x\right)+18018\,a^5\,b\,e^5\,\left(5\,A\,e\,\left(-2\,d+e\,x\right)+B\,\left(8\,d^2-4\,d\,e\,x+3\,e^2\,x^2\right)\right)-6435\,a^4\,b^2\,e^4\,\left(-7\,A\,e\,\left(8\,d^2-4\,d\,e\,x+3\,e^2\,x^2\right)+3\,B\,\left(16\,d^3-8\,d^2\,e\,x+6\,d\,e^2\,x^2-5\,e^3\,x^3\right)\right)+2860\,a^3\,b^3\,e^3\,\left(9\,A\,e\,\left(-16\,d^3+8\,d^2\,e\,x-6\,d\,e^2\,x^2+5\,e^3\,x^3\right)+B\,\left(128\,d^4-64\,d^3\,e\,x+48\,d^2\,e^2\,x^2-40\,d\,e^3\,x^3+35\,e^4\,x^4\right)\right)-195\,a^2\,b^4\,e^2\,\left(-11\,A\,e\,\left(128\,d^4-64\,d^3\,e\,x+48\,d^2\,e^2\,x^2-40\,d\,e^3\,x^3+35\,e^4\,x^4\right)+5\,B\,\left(256\,d^5-128\,d^4\,e\,x+96\,d^3\,e^2\,x^2-80\,d^2\,e^3\,x^3+70\,d\,e^4\,x^4-63\,e^5\,x^5\right)\right)+30\,a\,b^5\,e\,\left(13\,A\,e\,\left(-256\,d^5+128\,d^4\,e\,x-96\,d^3\,e^2\,x^2+80\,d^2\,e^3\,x^3-70\,d\,e^4\,x^4+63\,e^5\,x^5\right)+3\,B\,\left(1024\,d^6-512\,d^5\,e\,x+384\,d^4\,e^2\,x^2-320\,d^3\,e^3\,x^3+280\,d^2\,e^4\,x^4-252\,d\,e^5\,x^5+231\,e^6\,x^6\right)\right)+b^6\,\left(15\,A\,e\,\left(1024\,d^6-512\,d^5\,e\,x+384\,d^4\,e^2\,x^2-320\,d^3\,e^3\,x^3+280\,d^2\,e^4\,x^4-252\,d\,e^5\,x^5+231\,e^6\,x^6\right)-7\,B\,\left(2048\,d^7-1024\,d^6\,e\,x+768\,d^5\,e^2\,x^2-640\,d^4\,e^3\,x^3+560\,d^3\,e^4\,x^4-504\,d^2\,e^5\,x^5+462\,d\,e^6\,x^6-429\,e^7\,x^7\right)\right)\Big)$$

Problem 1805: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^3}{(d+e\,x)^{3/2}}\,dx$$

Optimal (type 2, 300 leaves, 3 steps):

$$\frac{2\,(b\,d-a\,e)^6\,(B\,d-A\,e)}{e^8\,\sqrt{d+e\,x}}+\frac{2\,(b\,d-a\,e)^5\,(7\,b\,B\,d-6\,A\,b\,e-a\,B\,e)\,\sqrt{d+e\,x}}{e^8}-\frac{2\,b\,(b\,d-a\,e)^4\,(7\,b\,B\,d-5\,A\,b\,e-2\,a\,B\,e)\,(d+e\,x)^{3/2}}{e^8}+\frac{2\,b^2\,(b\,d-a\,e)^3\,(7\,b\,B\,d-4\,A\,b\,e-3\,a\,B\,e)\,(d+e\,x)^{5/2}}{e^8}-\frac{10\,b^3\,(b\,d-a\,e)^2\,(7\,b\,B\,d-3\,A\,b\,e-4\,a\,B\,e)\,(d+e\,x)^{7/2}}{7\,e^8}+\frac{2\,b^4\,(b\,d-a\,e)\,(7\,b\,B\,d-2\,A\,b\,e-5\,a\,B\,e)\,(d+e\,x)^{9/2}}{3\,e^8}-\frac{2\,b^5\,(7\,b\,B\,d-A\,b\,e-6\,a\,B\,e)\,(d+e\,x)^{11/2}}{11\,e^8}+\frac{2\,b^6\,B\,(d+e\,x)^{13/2}}{13\,e^8}$$

Result (type 2, 624 leaves):

$$\frac{1}{3003\,e^8\,\sqrt{d+e\,x}}\,2\,\Big(3003\,a^6\,e^6\,\left(2\,B\,d-A\,e+B\,e\,x\right)+6006\,a^5\,b\,e^5\,\left(3\,A\,e\,\left(2\,d+e\,x\right)+B\,\left(-8\,d^2-4\,d\,e\,x+e^2\,x^2\right)\right)+$$
$$3003\,a^4\,b^2\,e^4\,\left(5\,A\,e\,\left(-8\,d^2-4\,d\,e\,x+e^2\,x^2\right)+3\,B\,\left(16\,d^3+8\,d^2\,e\,x-2\,d\,e^2\,x^2+e^3\,x^3\right)\right)-$$
$$1716\,a^3\,b^3\,e^3\,\Big(-7\,A\,e\,\left(16\,d^3+8\,d^2\,e\,x-2\,d\,e^2\,x^2+e^3\,x^3\right)+$$
$$B\,\left(128\,d^4+64\,d^3\,e\,x-16\,d^2\,e^2\,x^2+8\,d\,e^3\,x^3-5\,e^4\,x^4\right)\Big)+$$
$$143\,a^2\,b^4\,e^2\,\Big(9\,A\,e\,\left(-128\,d^4-64\,d^3\,e\,x+16\,d^2\,e^2\,x^2-8\,d\,e^3\,x^3+5\,e^4\,x^4\right)+$$
$$5\,B\,\left(256\,d^5+128\,d^4\,e\,x-32\,d^3\,e^2\,x^2+16\,d^2\,e^3\,x^3-10\,d\,e^4\,x^4+7\,e^5\,x^5\right)\Big)-$$
$$26\,a\,b^5\,e\,\Big(-11\,A\,e\,\left(256\,d^5+128\,d^4\,e\,x-32\,d^3\,e^2\,x^2+16\,d^2\,e^3\,x^3-10\,d\,e^4\,x^4+7\,e^5\,x^5\right)+$$
$$3\,B\,\left(1024\,d^6+512\,d^5\,e\,x-128\,d^4\,e^2\,x^2+64\,d^3\,e^3\,x^3-40\,d^2\,e^4\,x^4+28\,d\,e^5\,x^5-21\,e^6\,x^6\right)\Big)+$$
$$b^6\,\Big(13\,A\,e\,\left(-1024\,d^6-512\,d^5\,e\,x+128\,d^4\,e^2\,x^2-64\,d^3\,e^3\,x^3+40\,d^2\,e^4\,x^4-28\,d\,e^5\,x^5+21\,e^6\,x^6\right)+$$
$$7\,B\,\big(2048\,d^7+1024\,d^6\,e\,x-256\,d^5\,e^2\,x^2+128\,d^4\,e^3\,x^3-$$
$$80\,d^3\,e^4\,x^4+56\,d^2\,e^5\,x^5-42\,d\,e^6\,x^6+33\,e^7\,x^7\big)\Big)\Big)$$

Problem 1806: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,x\right)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^3}{\left(d+e\,x\right)^{5/2}}\,dx$$

Optimal (type 2, 302 leaves, 3 steps):

$$\frac{2\,\left(b\,d-a\,e\right)^6\,\left(B\,d-A\,e\right)}{3\,e^8\,\left(d+e\,x\right)^{3/2}}-\frac{2\,\left(b\,d-a\,e\right)^5\,\left(7\,b\,B\,d-6\,A\,b\,e-a\,B\,e\right)}{e^8\,\sqrt{d+e\,x}}-$$
$$\frac{6\,b\,\left(b\,d-a\,e\right)^4\,\left(7\,b\,B\,d-5\,A\,b\,e-2\,a\,B\,e\right)\,\sqrt{d+e\,x}}{e^8}+$$
$$\frac{10\,b^2\,\left(b\,d-a\,e\right)^3\,\left(7\,b\,B\,d-4\,A\,b\,e-3\,a\,B\,e\right)\,\left(d+e\,x\right)^{3/2}}{3\,e^8}-$$
$$\frac{2\,b^3\,\left(b\,d-a\,e\right)^2\,\left(7\,b\,B\,d-3\,A\,b\,e-4\,a\,B\,e\right)\,\left(d+e\,x\right)^{5/2}}{e^8}+$$
$$\frac{6\,b^4\,\left(b\,d-a\,e\right)\,\left(7\,b\,B\,d-2\,A\,b\,e-5\,a\,B\,e\right)\,\left(d+e\,x\right)^{7/2}}{7\,e^8}-$$
$$\frac{2\,b^5\,\left(7\,b\,B\,d-A\,b\,e-6\,a\,B\,e\right)\,\left(d+e\,x\right)^{9/2}}{9\,e^8}+\frac{2\,b^6\,B\,\left(d+e\,x\right)^{11/2}}{11\,e^8}$$

Result (type 2, 624 leaves):

$$\frac{1}{693\, e^8\, (d+e\, x)^{3/2}}$$
$$2\, \big(-231\, a^6\, e^6\, (2\, B\, d+A\, e+3\, B\, e\, x)+1386\, a^5\, b\, e^5\, \big(-A\, e\, (2\, d+3\, e\, x)+B\, (8\, d^2+12\, d\, e\, x+3\, e^2\, x^2)\big)+$$
$$3465\, a^4\, b^2\, e^4\, \big(A\, e\, (8\, d^2+12\, d\, e\, x+3\, e^2\, x^2)+B\, (-16\, d^3-24\, d^2\, e\, x-6\, d\, e^2\, x^2+e^3\, x^3)\big)+$$
$$924\, a^3\, b^3\, e^3\, \big(5\, A\, e\, (-16\, d^3-24\, d^2\, e\, x-6\, d\, e^2\, x^2+e^3\, x^3)+$$
$$B\, (128\, d^4+192\, d^3\, e\, x+48\, d^2\, e^2\, x^2-8\, d\, e^3\, x^3+3\, e^4\, x^4)\big)-$$
$$99\, a^2\, b^4\, e^2\, \big(-7\, A\, e\, (128\, d^4+192\, d^3\, e\, x+48\, d^2\, e^2\, x^2-8\, d\, e^3\, x^3+3\, e^4\, x^4)+$$
$$5\, B\, (256\, d^5+384\, d^4\, e\, x+96\, d^3\, e^2\, x^2-16\, d^2\, e^3\, x^3+6\, d\, e^4\, x^4-3\, e^5\, x^5)\big)+$$
$$66\, a\, b^5\, e\, \big(-3\, A\, e\, (256\, d^5+384\, d^4\, e\, x+96\, d^3\, e^2\, x^2-16\, d^2\, e^3\, x^3+6\, d\, e^4\, x^4-3\, e^5\, x^5)+$$
$$B\, (1024\, d^6+1536\, d^5\, e\, x+384\, d^4\, e^2\, x^2-64\, d^3\, e^3\, x^3+24\, d^2\, e^4\, x^4-12\, d\, e^5\, x^5+7\, e^6\, x^6)\big)+$$
$$b^6\, \big(11\, A\, e\, (1024\, d^6+1536\, d^5\, e\, x+384\, d^4\, e^2\, x^2-64\, d^3\, e^3\, x^3+24\, d^2\, e^4\, x^4-12\, d\, e^5\, x^5+7\, e^6\, x^6)-$$
$$7\, B\, (2048\, d^7+3072\, d^6\, e\, x+768\, d^5\, e^2\, x^2-128\, d^4\, e^3\, x^3+$$
$$48\, d^3\, e^4\, x^4-24\, d^2\, e^5\, x^5+14\, d\, e^6\, x^6-9\, e^7\, x^7)\big)\big)$$

Problem 1807: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B\, x)\, (a^2+2\, a\, b\, x+b^2\, x^2)^3}{(d+e\, x)^{7/2}}\, dx$$

Optimal (type 2, 304 leaves, 3 steps):

$$\frac{2\, (b\, d-a\, e)^6\, (B\, d-A\, e)}{5\, e^8\, (d+e\, x)^{5/2}}-\frac{2\, (b\, d-a\, e)^5\, (7\, b\, B\, d-6\, A\, b\, e-a\, B\, e)}{3\, e^8\, (d+e\, x)^{3/2}}+$$
$$\frac{6\, b\, (b\, d-a\, e)^4\, (7\, b\, B\, d-5\, A\, b\, e-2\, a\, B\, e)}{e^8\, \sqrt{d+e\, x}}+\frac{10\, b^2\, (b\, d-a\, e)^3\, (7\, b\, B\, d-4\, A\, b\, e-3\, a\, B\, e)\, \sqrt{d+e\, x}}{e^8}-$$
$$\frac{10\, b^3\, (b\, d-a\, e)^2\, (7\, b\, B\, d-3\, A\, b\, e-4\, a\, B\, e)\, (d+e\, x)^{3/2}}{3\, e^8}+$$
$$\frac{6\, b^4\, (b\, d-a\, e)\, (7\, b\, B\, d-2\, A\, b\, e-5\, a\, B\, e)\, (d+e\, x)^{5/2}}{5\, e^8}-$$
$$\frac{2\, b^5\, (7\, b\, B\, d-A\, b\, e-6\, a\, B\, e)\, (d+e\, x)^{7/2}}{7\, e^8}+\frac{2\, b^6\, B\, (d+e\, x)^{9/2}}{9\, e^8}$$

Result (type 2, 627 leaves):

$$-\frac{1}{315\,e^8\,(d+e\,x)^{5/2}}\,2\,\Big(21\,a^6\,e^6\,(2\,B\,d+3\,A\,e+5\,B\,e\,x)+126\,a^5\,b\,e^5\,\big(A\,e\,(2\,d+5\,e\,x)+B\,(8\,d^2+20\,d\,e\,x+15\,e^2\,x^2)\big)-315\,a^4\,b^2\,e^4\,\big(-A\,e\,(8\,d^2+20\,d\,e\,x+15\,e^2\,x^2)+3\,B\,(16\,d^3+40\,d^2\,e\,x+30\,d\,e^2\,x^2+5\,e^3\,x^3)\big)+420\,a^3\,b^3\,e^3\,\big(-3\,A\,e\,(16\,d^3+40\,d^2\,e\,x+30\,d\,e^2\,x^2+5\,e^3\,x^3)+B\,(128\,d^4+320\,d^3\,e\,x+240\,d^2\,e^2\,x^2+40\,d\,e^3\,x^3-5\,e^4\,x^4)\big)-315\,a^2\,b^4\,e^2\,\big(A\,e\,(-128\,d^4-320\,d^3\,e\,x-240\,d^2\,e^2\,x^2-40\,d\,e^3\,x^3+5\,e^4\,x^4)+B\,(256\,d^5+640\,d^4\,e\,x+480\,d^3\,e^2\,x^2+80\,d^2\,e^3\,x^3-10\,d\,e^4\,x^4+3\,e^5\,x^5)\big)+18\,a\,b^5\,e\,\big(-7\,A\,e\,(256\,d^5+640\,d^4\,e\,x+480\,d^3\,e^2\,x^2+80\,d^2\,e^3\,x^3-10\,d\,e^4\,x^4+3\,e^5\,x^5)+3\,B\,(1024\,d^6+2560\,d^5\,e\,x+1920\,d^4\,e^2\,x^2+320\,d^3\,e^3\,x^3-40\,d^2\,e^4\,x^4+12\,d\,e^5\,x^5-5\,e^6\,x^6)\big)+b^6\,\big(9\,A\,e\,(1024\,d^6+2560\,d^5\,e\,x+1920\,d^4\,e^2\,x^2+320\,d^3\,e^3\,x^3-40\,d^2\,e^4\,x^4+12\,d\,e^5\,x^5-5\,e^6\,x^6)-7\,B\,(2048\,d^7+5120\,d^6\,e\,x+3840\,d^5\,e^2\,x^2+640\,d^4\,e^3\,x^3-80\,d^3\,e^4\,x^4+24\,d^2\,e^5\,x^5-10\,d\,e^6\,x^6+5\,e^7\,x^7)\big)\Big)$$

Problem 1884: Result more than twice size of optimal antiderivative.

$$\int (A+B\,x)\,(d+e\,x)^m\,(a^2+2\,a\,b\,x+b^2\,x^2)^2\,dx$$

Optimal (type 3, 234 leaves, 3 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):

$$\frac{1}{e^6\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)}(d+e\,x)^{1+m}\,\Big(a^4\,e^4\,(360+342\,m+119\,m^2+18\,m^3+m^4)\,\big(-B\,d+A\,e\,(2+m)+B\,e\,(1+m)\,x\big)+4\,a^3\,b\,e^3\,(120+74\,m+15\,m^2+m^3)\,\big(A\,e\,(3+m)\,(-d+e\,(1+m)\,x)+B\,(2\,d^2-2\,d\,e\,(1+m)\,x+e^2\,(2+3\,m+m^2)\,x^2)\big)+6\,a^2\,b^2\,e^2\,(30+11\,m+m^2)\,\big(A\,e\,(4+m)\,(2\,d^2-2\,d\,e\,(1+m)\,x+e^2\,(2+3\,m+m^2)\,x^2)+B\,(-6\,d^3+6\,d^2\,e\,(1+m)\,x-3\,d\,e^2\,(2+3\,m+m^2)\,x^2+e^3\,(6+11\,m+6\,m^2+m^3)\,x^3)\big)+4\,a\,b^3\,e\,(6+m)\,\big(A\,e\,(5+m)\,(-6\,d^3+6\,d^2\,e\,(1+m)\,x-3\,d\,e^2\,(2+3\,m+m^2)\,x^2+e^3\,(6+11\,m+6\,m^2+m^3)\,x^3)+B\,(24\,d^4-24\,d^3\,e\,(1+m)\,x+12\,d^2\,e^2\,(2+3\,m+m^2)\,x^2-4\,d\,e^3\,(6+11\,m+6\,m^2+m^3)\,x^3+e^4\,(24+50\,m+35\,m^2+10\,m^3+m^4)\,x^4)\big)-b^4\,\big(-A\,e\,(6+m)\,(24\,d^4-24\,d^3\,e\,(1+m)\,x+12\,d^2\,e^2\,(2+3\,m+m^2)\,x^2-4\,d\,e^3\,(6+11\,m+6\,m^2+m^3)\,x^3+e^4\,(24+50\,m+35\,m^2+10\,m^3+m^4)\,x^4)+B\,(120\,d^5-120\,d^4\,e\,(1+m)\,x+60\,d^3\,e^2\,(2+3\,m+m^2)\,x^2-20\,d^2\,e^3\,(6+11\,m+6\,m^2+m^3)\,x^3+5\,d\,e^4\,(24+50\,m+35\,m^2+10\,m^3+m^4)\,x^4-e^5\,(120+274\,m+225\,m^2+85\,m^3+15\,m^4+m^5)\,x^5)\big)\Big)$$

Problem 1886: Unable to integrate problem.

$$\int \frac{(A+B x)\,(d+e x)^m}{a^2+2 a b x+b^2 x^2}\,dx$$

Optimal (type 5, 112 leaves, 3 steps):

$$-\frac{(A b-a B)\,(d+e x)^{1+m}}{b\,(b d-a e)\,(a+b x)}+\left(\left(a B e\,(1+m)-b\,(B d+A e m)\right)\,(d+e x)^{1+m}\,\text{Hypergeometric2F1}\left[1,\,1+m,\,2+m,\,\frac{b\,(d+e x)}{b d-a e}\right]\right)\Big/\left(b\,(b d-a e)^2\,(1+m)\right)$$

Result (type 8, 33 leaves):

$$\int \frac{(A+B x)\,(d+e x)^m}{a^2+2 a b x+b^2 x^2}\,dx$$

Problem 1887: Unable to integrate problem.

$$\int \frac{(A+B x)\,(d+e x)^m}{\left(a^2+2 a b x+b^2 x^2\right)^2}\,dx$$

Optimal (type 5, 126 leaves, 3 steps):

$$-\frac{(A b-a B)\,(d+e x)^{1+m}}{3 b\,(b d-a e)\,(a+b x)^3}-\left(e^2\,\left(b\,(3 B d-A e\,(2-m))-a B e\,(1+m)\right)\,(d+e x)^{1+m}\,\text{Hypergeometric2F1}\left[3,\,1+m,\,2+m,\,\frac{b\,(d+e x)}{b d-a e}\right]\right)\Big/\left(3 b\,(b d-a e)^4\,(1+m)\right)$$

Result (type 8, 33 leaves):

$$\int \frac{(A+B x)\,(d+e x)^m}{\left(a^2+2 a b x+b^2 x^2\right)^2}\,dx$$

Problem 1888: Result more than twice size of optimal antiderivative.

$$\int (A+B x)\,(d+e x)^m\,\left(a^2+2 a b x+b^2 x^2\right)^{5/2}\,dx$$

Optimal (type 3, 471 leaves, 3 steps):

$$\frac{(b\,d-a\,e)^5\,(B\,d-A\,e)\,(d+e\,x)^{1+m}\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{e^7\,(1+m)\,(a+b\,x)}-$$
$$\frac{(b\,d-a\,e)^4\,(6\,b\,B\,d-5\,A\,b\,e-a\,B\,e)\,(d+e\,x)^{2+m}\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{e^7\,(2+m)\,(a+b\,x)}+$$
$$\left(5\,b\,(b\,d-a\,e)^3\,(3\,b\,B\,d-2\,A\,b\,e-a\,B\,e)\,(d+e\,x)^{3+m}\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\right)\Big/\left(e^7\,(3+m)\,(a+b\,x)\right)-$$
$$\left(10\,b^2\,(b\,d-a\,e)^2\,(2\,b\,B\,d-A\,b\,e-a\,B\,e)\,(d+e\,x)^{4+m}\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\right)\Big/\left(e^7\,(4+m)\,(a+b\,x)\right)+$$
$$\left(5\,b^3\,(b\,d-a\,e)\,(3\,b\,B\,d-A\,b\,e-2\,a\,B\,e)\,(d+e\,x)^{5+m}\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\right)\Big/\left(e^7\,(5+m)\,(a+b\,x)\right)-$$
$$\frac{b^4\,(6\,b\,B\,d-A\,b\,e-5\,a\,B\,e)\,(d+e\,x)^{6+m}\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{e^7\,(6+m)\,(a+b\,x)}+\frac{b^5\,B\,(d+e\,x)^{7+m}\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{e^7\,(7+m)\,(a+b\,x)}$$

Result (type 3, 969 leaves) :

$$\frac{1}{e^7\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(a+b\,x)}$$
$$\sqrt{(a+b\,x)^2}\,(d+e\,x)^{1+m}\Big(a^5\,e^5\,(2520+2754\,m+1175\,m^2+245\,m^3+25\,m^4+m^5)$$
$$(-B\,d+A\,e\,(2+m)+B\,e\,(1+m)\,x)+5\,a^4\,b\,e^4\,(840+638\,m+179\,m^2+22\,m^3+m^4)$$
$$(A\,e\,(3+m)\,(-d+e\,(1+m)\,x)+B\,(2\,d^2-2\,d\,e\,(1+m)\,x+e^2\,(2+3\,m+m^2)\,x^2))+$$
$$10\,a^3\,b^2\,e^3\,(210+107\,m+18\,m^2+m^3)\,(A\,e\,(4+m)\,(2\,d^2-2\,d\,e\,(1+m)\,x+e^2\,(2+3\,m+m^2)\,x^2)+$$
$$B\,(-6\,d^3+6\,d^2\,e\,(1+m)\,x-3\,d\,e^2\,(2+3\,m+m^2)\,x^2+e^3\,(6+11\,m+6\,m^2+m^3)\,x^3))+$$
$$10\,a^2\,b^3\,e^2\,(42+13\,m+m^2)\,(A\,e\,(5+m)\,(-6\,d^3+6\,d^2\,e\,(1+m)\,x-3\,d\,e^2\,(2+3\,m+m^2)\,x^2+$$
$$e^3\,(6+11\,m+6\,m^2+m^3)\,x^3)+B\,(24\,d^4-24\,d^3\,e\,(1+m)\,x+12\,d^2\,e^2\,(2+3\,m+m^2)\,x^2-$$
$$4\,d\,e^3\,(6+11\,m+6\,m^2+m^3)\,x^3+e^4\,(24+50\,m+35\,m^2+10\,m^3+m^4)\,x^4))+$$
$$5\,a\,b^4\,e\,(7+m)\,(A\,e\,(6+m)\,(24\,d^4-24\,d^3\,e\,(1+m)\,x+12\,d^2\,e^2\,(2+3\,m+m^2)\,x^2-$$
$$4\,d\,e^3\,(6+11\,m+6\,m^2+m^3)\,x^3+e^4\,(24+50\,m+35\,m^2+10\,m^3+m^4)\,x^4)+$$
$$B\,(-120\,d^5+120\,d^4\,e\,(1+m)\,x-60\,d^3\,e^2\,(2+3\,m+m^2)\,x^2+20\,d^2\,e^3\,(6+11\,m+6\,m^2+m^3)\,x^3-$$
$$5\,d\,e^4\,(24+50\,m+35\,m^2+10\,m^3+m^4)\,x^4+e^5\,(120+274\,m+225\,m^2+85\,m^3+15\,m^4+m^5)\,x^5))+$$
$$b^5\,(A\,e\,(7+m)\,(-120\,d^5+120\,d^4\,e\,(1+m)\,x-60\,d^3\,e^2\,(2+3\,m+m^2)\,x^2+$$
$$20\,d^2\,e^3\,(6+11\,m+6\,m^2+m^3)\,x^3-5\,d\,e^4\,(24+50\,m+35\,m^2+10\,m^3+m^4)\,x^4+$$
$$e^5\,(120+274\,m+225\,m^2+85\,m^3+15\,m^4+m^5)\,x^5)+$$
$$B\,(720\,d^6-720\,d^5\,e\,(1+m)\,x+360\,d^4\,e^2\,(2+3\,m+m^2)\,x^2-120\,d^3\,e^3\,(6+11\,m+6\,m^2+m^3)\,x^3+$$
$$30\,d^2\,e^4\,(24+50\,m+35\,m^2+10\,m^3+m^4)\,x^4-6\,d\,e^5\,(120+274\,m+225\,m^2+85\,m^3+15\,m^4+m^5)$$
$$x^5+e^6\,(720+1764\,m+1624\,m^2+735\,m^3+175\,m^4+21\,m^5+m^6)\,x^6))\Big)$$

Problem 1892: Unable to integrate problem.

$$\int\frac{(A+B\,x)\,(d+e\,x)^m}{(a^2+2\,a\,b\,x+b^2\,x^2)^{3/2}}\,dx$$

Optimal (type 5, 169 leaves, 3 steps) :

$$-\frac{(A b-a B)\ (d+e x)^{1+m}}{2 b\ (b d-a e)\ (a+b x)\ \sqrt{a^2+2 a b x+b^2 x^2}}+\left(e\ (b\ (2 B d-A e\ (1-m))-a B e\ (1+m))\ (a+b x)\ (d+e x)^{1+m}\ \text{Hypergeometric2F1}\left[2,\ 1+m,\ 2+m,\ \frac{b\ (d+e x)}{b d-a e}\right]\right)\Big/\left(2 b\ (b d-a e)^3\ (1+m)\ \sqrt{a^2+2 a b x+b^2 x^2}\right)$$

Result (type 8, 35 leaves):

$$\int\frac{(A+B x)\ (d+e x)^m}{\left(a^2+2 a b x+b^2 x^2\right)^{3/2}}\,dx$$

Problem 1893: Result unnecessarily involves higher level functions.

$$\int (A+B x)\ (d+e x)^m\ \left(a^2+2 a b x+b^2 x^2\right)^p\,dx$$

Optimal (type 5, 174 leaves, 4 steps):

$$\frac{B\ (a+b x)\ (d+e x)^{1+m}\ \left(a^2+2 a b x+b^2 x^2\right)^p}{b e\ (2+m+2 p)}+\left((A b e\ (2+m+2 p)-B\ (a e\ (1+m)+b\ (d+2 d p)))\ \left(-\frac{e\ (a+b x)}{b d-a e}\right)^{-2 p}\ (d+e x)^{1+m}\ \left(a^2+2 a b x+b^2 x^2\right)^p\ \text{Hypergeometric2F1}\left[1+m,\ -2 p,\ 2+m,\ \frac{b\ (d+e x)}{b d-a e}\right]\right)\Big/\left(b e^2\ (1+m)\ (2+m+2 p)\right)$$

Result (type 6, 204 leaves):

$$\left((a+b x)^2\right)^p\ (d+e x)^m\ \left(\left(3 a B d x^2\ \text{AppellF1}\left[2,\ -2 p,\ -m,\ 3,\ -\frac{b x}{a},\ -\frac{e x}{d}\right]\right)\Big/\left(6 a d\ \text{AppellF1}\left[2,\ -2 p,\ -m,\ 3,\ -\frac{b x}{a},\ -\frac{e x}{d}\right]+4 b d p x\ \text{AppellF1}\left[3,\ 1-2 p,\ -m,\ 4,\ -\frac{b x}{a},\ -\frac{e x}{d}\right]+2 a e m x\ \text{AppellF1}\left[3,\ -2 p,\ 1-m,\ 4,\ -\frac{b x}{a},\ -\frac{e x}{d}\right]\right)+\frac{1}{e\ (1+m)}A\left(\frac{e\ (a+b x)}{-b d+a e}\right)^{-2 p}\ (d+e x)\ \text{Hypergeometric2F1}\left[1+m,\ -2 p,\ 2+m,\ \frac{b\ (d+e x)}{b d-a e}\right]\right)$$

Problem 1895: Result more than twice size of optimal antiderivative.

$$\int (a+b x)\ (d+e x)^5\ \left(a^2+2 a b x+b^2 x^2\right)\,dx$$

Optimal (type 1, 92 leaves, 3 steps):

$$-\frac{(b d-a e)^3\ (d+e x)^6}{6 e^4}+\frac{3 b\ (b d-a e)^2\ (d+e x)^7}{7 e^4}-\frac{3 b^2\ (b d-a e)\ (d+e x)^8}{8 e^4}+\frac{b^3\ (d+e x)^9}{9 e^4}$$

Result (type 1, 267 leaves):

$$a^3 d^5 x+\frac{1}{2} a^2 d^4 (3 b d+5 a e) x^2+\frac{1}{3} a d^3 \left(3 b^2 d^2+15 a b d e+10 a^2 e^2\right) x^3+\frac{1}{4} d^2 \left(b^3 d^3+15 a b^2 d^2 e+30 a^2 b d e^2+10 a^3 e^3\right) x^4+d e \left(b^3 d^3+6 a b^2 d^2 e+6 a^2 b d e^2+a^3 e^3\right) x^5+\frac{1}{6} e^2 \left(10 b^3 d^3+30 a b^2 d^2 e+15 a^2 b d e^2+a^3 e^3\right) x^6+\frac{1}{7} b e^3 \left(10 b^2 d^2+15 a b d e+3 a^2 e^2\right) x^7+\frac{1}{8} b^2 e^4 (5 b d+3 a e) x^8+\frac{1}{9} b^3 e^5 x^9$$

Problem 1896: Result more than twice size of optimal antiderivative.

$$\int (a+b x) (d+e x)^4 \left(a^2+2 a b x+b^2 x^2\right) \, dx$$

Optimal (type 1, 92 leaves, 3 steps):

$$-\frac{(b d-a e)^3 (d+e x)^5}{5 e^4}+\frac{b (b d-a e)^2 (d+e x)^6}{2 e^4}-\frac{3 b^2 (b d-a e) (d+e x)^7}{7 e^4}+\frac{b^3 (d+e x)^8}{8 e^4}$$

Result (type 1, 217 leaves):

$$a^3 d^4 x+\frac{1}{2} a^2 d^3 (3 b d+4 a e) x^2+a d^2 \left(b^2 d^2+4 a b d e+2 a^2 e^2\right) x^3+\frac{1}{4} d \left(b^3 d^3+12 a b^2 d^2 e+18 a^2 b d e^2+4 a^3 e^3\right) x^4+\frac{1}{5} e \left(4 b^3 d^3+18 a b^2 d^2 e+12 a^2 b d e^2+a^3 e^3\right) x^5+\frac{1}{2} b e^2 \left(2 b^2 d^2+4 a b d e+a^2 e^2\right) x^6+\frac{1}{7} b^2 e^3 (4 b d+3 a e) x^7+\frac{1}{8} b^3 e^4 x^8$$

Problem 1905: Result more than twice size of optimal antiderivative.

$$\int (a+b x) (d+e x)^6 \left(a^2+2 a b x+b^2 x^2\right)^2 \, dx$$

Optimal (type 1, 143 leaves, 3 steps):

$$-\frac{(b d-a e)^5 (d+e x)^7}{7 e^6}+\frac{5 b (b d-a e)^4 (d+e x)^8}{8 e^6}-\frac{10 b^2 (b d-a e)^3 (d+e x)^9}{9 e^6}+\frac{b^3 (b d-a e)^2 (d+e x)^{10}}{e^6}-\frac{5 b^4 (b d-a e) (d+e x)^{11}}{11 e^6}+\frac{b^5 (d+e x)^{12}}{12 e^6}$$

Result (type 1, 501 leaves):

$$a^5 d^6 x + \frac{1}{2} a^4 d^5 (5 b d + 6 a e) x^2 + \frac{5}{3} a^3 d^4 (2 b^2 d^2 + 6 a b d e + 3 a^2 e^2) x^3 + \frac{5}{4} a^2 d^3 (2 b^3 d^3 + 12 a b^2 d^2 e + 15 a^2 b d e^2 + 4 a^3 e^3) x^4 + a d^2 (b^4 d^4 + 12 a b^3 d^3 e + 30 a^2 b^2 d^2 e^2 + 20 a^3 b d e^3 + 3 a^4 e^4) x^5 + \frac{1}{6} d (b^5 d^5 + 30 a b^4 d^4 e + 150 a^2 b^3 d^3 e^2 + 200 a^3 b^2 d^2 e^3 + 75 a^4 b d e^4 + 6 a^5 e^5) x^6 + \frac{1}{7} e (6 b^5 d^5 + 75 a b^4 d^4 e + 200 a^2 b^3 d^3 e^2 + 150 a^3 b^2 d^2 e^3 + 30 a^4 b d e^4 + a^5 e^5) x^7 + \frac{5}{8} b e^2 (3 b^4 d^4 + 20 a b^3 d^3 e + 30 a^2 b^2 d^2 e^2 + 12 a^3 b d e^3 + a^4 e^4) x^8 + \frac{5}{9} b^2 e^3 (4 b^3 d^3 + 15 a b^2 d^2 e + 12 a^2 b d e^2 + 2 a^3 e^3) x^9 + \frac{1}{2} b^3 e^4 (3 b^2 d^2 + 6 a b d e + 2 a^2 e^2) x^{10} + \frac{1}{11} b^4 e^5 (6 b d + 5 a e) x^{11} + \frac{1}{12} b^5 e^6 x^{12}$$

Problem 1906: Result more than twice size of optimal antiderivative.

$$\int (a + b x) (d + e x)^5 (a^2 + 2 a b x + b^2 x^2)^2 \, dx$$

Optimal (type 1, 146 leaves, 3 steps):

$$\frac{(b d - a e)^5 (a + b x)^6}{6 b^6} + \frac{5 e (b d - a e)^4 (a + b x)^7}{7 b^6} + \frac{5 e^2 (b d - a e)^3 (a + b x)^8}{4 b^6} + \frac{10 e^3 (b d - a e)^2 (a + b x)^9}{9 b^6} + \frac{e^4 (b d - a e) (a + b x)^{10}}{2 b^6} + \frac{e^5 (a + b x)^{11}}{11 b^6}$$

Result (type 1, 413 leaves):

$$a^5 d^5 x + \frac{5}{2} a^4 d^4 (b d + a e) x^2 + \frac{5}{3} a^3 d^3 (2 b^2 d^2 + 5 a b d e + 2 a^2 e^2) x^3 + \frac{5}{2} a^2 d^2 (b^3 d^3 + 5 a b^2 d^2 e + 5 a^2 b d e^2 + a^3 e^3) x^4 + a d (b^4 d^4 + 10 a b^3 d^3 e + 20 a^2 b^2 d^2 e^2 + 10 a^3 b d e^3 + a^4 e^4) x^5 + \frac{1}{6} (b^5 d^5 + 25 a b^4 d^4 e + 100 a^2 b^3 d^3 e^2 + 100 a^3 b^2 d^2 e^3 + 25 a^4 b d e^4 + a^5 e^5) x^6 + \frac{5}{7} b e (b^4 d^4 + 10 a b^3 d^3 e + 20 a^2 b^2 d^2 e^2 + 10 a^3 b d e^3 + a^4 e^4) x^7 + \frac{5}{4} b^2 e^2 (b^3 d^3 + 5 a b^2 d^2 e + 5 a^2 b d e^2 + a^3 e^3) x^8 + \frac{5}{9} b^3 e^3 (2 b^2 d^2 + 5 a b d e + 2 a^2 e^2) x^9 + \frac{1}{2} b^4 e^4 (b d + a e) x^{10} + \frac{1}{11} b^5 e^5 x^{11}$$

Problem 1907: Result more than twice size of optimal antiderivative.

$$\int (a + b x) (d + e x)^4 (a^2 + 2 a b x + b^2 x^2)^2 \, dx$$

Optimal (type 1, 119 leaves, 3 steps):

$$\frac{(b d-a e)^4 (a+b x)^6}{6 b^5}+\frac{4 e (b d-a e)^3 (a+b x)^7}{7 b^5}+\frac{3 e^2 (b d-a e)^2 (a+b x)^8}{4 b^5}+\frac{4 e^3 (b d-a e) (a+b x)^9}{9 b^5}+\frac{e^4 (a+b x)^{10}}{10 b^5}$$

Result (type 1, 301 leaves):

$$\frac{1}{1260} x \left(252 a^5 \left(5 d^4+10 d^3 e x+10 d^2 e^2 x^2+5 d e^3 x^3+e^4 x^4\right)+210 a^4 b x \left(15 d^4+40 d^3 e x+45 d^2 e^2 x^2+24 d e^3 x^3+5 e^4 x^4\right)+120 a^3 b^2 x^2 \left(35 d^4+105 d^3 e x+126 d^2 e^2 x^2+70 d e^3 x^3+15 e^4 x^4\right)+45 a^2 b^3 x^3 \left(70 d^4+224 d^3 e x+280 d^2 e^2 x^2+160 d e^3 x^3+35 e^4 x^4\right)+10 a b^4 x^4 \left(126 d^4+420 d^3 e x+540 d^2 e^2 x^2+315 d e^3 x^3+70 e^4 x^4\right)+b^5 x^5 \left(210 d^4+720 d^3 e x+945 d^2 e^2 x^2+560 d e^3 x^3+126 e^4 x^4\right)\right)$$

Problem 1908: Result more than twice size of optimal antiderivative.

$$\int (a+b x) (d+e x)^3 \left(a^2+2 a b x+b^2 x^2\right)^2 \, dx$$

Optimal (type 1, 92 leaves, 3 steps):

$$\frac{(b d-a e)^3 (a+b x)^6}{6 b^4}+\frac{3 e (b d-a e)^2 (a+b x)^7}{7 b^4}+\frac{3 e^2 (b d-a e) (a+b x)^8}{8 b^4}+\frac{e^3 (a+b x)^9}{9 b^4}$$

Result (type 1, 235 leaves):

$$\frac{1}{504} x \left(126 a^5 \left(4 d^3+6 d^2 e x+4 d e^2 x^2+e^3 x^3\right)+126 a^4 b x \left(10 d^3+20 d^2 e x+15 d e^2 x^2+4 e^3 x^3\right)+84 a^3 b^2 x^2 \left(20 d^3+45 d^2 e x+36 d e^2 x^2+10 e^3 x^3\right)+36 a^2 b^3 x^3 \left(35 d^3+84 d^2 e x+70 d e^2 x^2+20 e^3 x^3\right)+9 a b^4 x^4 \left(56 d^3+140 d^2 e x+120 d e^2 x^2+35 e^3 x^3\right)+b^5 x^5 \left(84 d^3+216 d^2 e x+189 d e^2 x^2+56 e^3 x^3\right)\right)$$

Problem 1909: Result more than twice size of optimal antiderivative.

$$\int (a+b x) (d+e x)^2 \left(a^2+2 a b x+b^2 x^2\right)^2 \, dx$$

Optimal (type 1, 65 leaves, 3 steps):

$$\frac{(b d-a e)^2 (a+b x)^6}{6 b^3}+\frac{2 e (b d-a e) (a+b x)^7}{7 b^3}+\frac{e^2 (a+b x)^8}{8 b^3}$$

Result (type 1, 189 leaves):

$$a^5 d^2 x+\frac{1}{2} a^4 d (5 b d+2 a e) x^2+\frac{1}{3} a^3 \left(10 b^2 d^2+10 a b d e+a^2 e^2\right) x^3+\frac{5}{4} a^2 b \left(2 b^2 d^2+4 a b d e+a^2 e^2\right) x^4+a b^2 \left(b^2 d^2+4 a b d e+2 a^2 e^2\right) x^5+\frac{1}{6} b^3 \left(b^2 d^2+10 a b d e+10 a^2 e^2\right) x^6+\frac{1}{7} b^4 e (2 b d+5 a e) x^7+\frac{1}{8} b^5 e^2 x^8$$

Problem 1910: Result more than twice size of optimal antiderivative.

$$\int (a+b x) (d+e x) \left(a^2+2 a b x+b^2 x^2\right)^2 \, dx$$

Optimal (type 1, 38 leaves, 3 steps):

$$\frac{(b d-a e) (a+b x)^6}{6 b^2}+\frac{e (a+b x)^7}{7 b^2}$$

Result (type 1, 109 leaves):

$$a^5 d x+\frac{1}{2} a^4 (5 b d+a e) x^2+\frac{5}{3} a^3 b (2 b d+a e) x^3+\frac{5}{2} a^2 b^2 (b d+a e) x^4+a b^3 (b d+2 a e) x^5+\frac{1}{6} b^4 (b d+5 a e) x^6+\frac{1}{7} b^5 e x^7$$

Problem 1916: Result more than twice size of optimal antiderivative.

$$\int (a+b x) (d+e x)^6 \left(a^2+2 a b x+b^2 x^2\right)^3 \, dx$$

Optimal (type 1, 173 leaves, 3 steps):

$$\frac{(b d-a e)^6 (a+b x)^8}{8 b^7}+\frac{2 e (b d-a e)^5 (a+b x)^9}{3 b^7}+\frac{3 e^2 (b d-a e)^4 (a+b x)^{10}}{2 b^7}+\frac{20 e^3 (b d-a e)^3 (a+b x)^{11}}{11 b^7}+\frac{5 e^4 (b d-a e)^2 (a+b x)^{12}}{4 b^7}+\frac{6 e^5 (b d-a e) (a+b x)^{13}}{13 b^7}+\frac{e^6 (a+b x)^{14}}{14 b^7}$$

Result (type 1, 581 leaves):

$$\frac{1}{24024} x \left(3432 a^7 \left(7 d^6+21 d^5 e x+35 d^4 e^2 x^2+35 d^3 e^3 x^3+21 d^2 e^4 x^4+7 d e^5 x^5+e^6 x^6\right)+3003 a^6 b x \left(28 d^6+112 d^5 e x+210 d^4 e^2 x^2+224 d^3 e^3 x^3+140 d^2 e^4 x^4+48 d e^5 x^5+7 e^6 x^6\right)+2002 a^5 b^2 x^2 \left(84 d^6+378 d^5 e x+756 d^4 e^2 x^2+840 d^3 e^3 x^3+540 d^2 e^4 x^4+189 d e^5 x^5+28 e^6 x^6\right)+1001 a^4 b^3 x^3 \left(210 d^6+1008 d^5 e x+2100 d^4 e^2 x^2+2400 d^3 e^3 x^3+1575 d^2 e^4 x^4+560 d e^5 x^5+84 e^6 x^6\right)+364 a^3 b^4 x^4 \left(462 d^6+2310 d^5 e x+4950 d^4 e^2 x^2+5775 d^3 e^3 x^3+3850 d^2 e^4 x^4+1386 d e^5 x^5+210 e^6 x^6\right)+91 a^2 b^5 x^5 \left(924 d^6+4752 d^5 e x+10395 d^4 e^2 x^2+12320 d^3 e^3 x^3+8316 d^2 e^4 x^4+3024 d e^5 x^5+462 e^6 x^6\right)+14 a b^6 x^6 \left(1716 d^6+9009 d^5 e x+20020 d^4 e^2 x^2+24024 d^3 e^3 x^3+16380 d^2 e^4 x^4+6006 d e^5 x^5+924 e^6 x^6\right)+b^7 x^7 \left(3003 d^6+16016 d^5 e x+36036 d^4 e^2 x^2+43680 d^3 e^3 x^3+30030 d^2 e^4 x^4+11088 d e^5 x^5+1716 e^6 x^6\right)\right)$$

Problem 1917: Result more than twice size of optimal antiderivative.

$$\int (a+b x) (d+e x)^5 \left(a^2+2 a b x+b^2 x^2\right)^3 \, dx$$

Optimal (type 1, 143 leaves, 3 steps):

$$\frac{(b\,d-a\,e)^5\,(a+b\,x)^8}{8\,b^6}+\frac{5\,e\,(b\,d-a\,e)^4\,(a+b\,x)^9}{9\,b^6}+\frac{e^2\,(b\,d-a\,e)^3\,(a+b\,x)^{10}}{b^6}+\frac{10\,e^3\,(b\,d-a\,e)^2\,(a+b\,x)^{11}}{11\,b^6}+\frac{5\,e^4\,(b\,d-a\,e)\,(a+b\,x)^{12}}{12\,b^6}+\frac{e^5\,(a+b\,x)^{13}}{13\,b^6}$$

Result (type 1, 493 leaves):

$$\frac{1}{10\,296}\,x\,\big(1716\,a^7\,(6\,d^5+15\,d^4\,e\,x+20\,d^3\,e^2\,x^2+15\,d^2\,e^3\,x^3+6\,d\,e^4\,x^4+e^5\,x^5)+$$
$$1716\,a^6\,b\,x\,(21\,d^5+70\,d^4\,e\,x+105\,d^3\,e^2\,x^2+84\,d^2\,e^3\,x^3+35\,d\,e^4\,x^4+6\,e^5\,x^5)+$$
$$1287\,a^5\,b^2\,x^2\,(56\,d^5+210\,d^4\,e\,x+336\,d^3\,e^2\,x^2+280\,d^2\,e^3\,x^3+120\,d\,e^4\,x^4+21\,e^5\,x^5)+$$
$$715\,a^4\,b^3\,x^3\,(126\,d^5+504\,d^4\,e\,x+840\,d^3\,e^2\,x^2+720\,d^2\,e^3\,x^3+315\,d\,e^4\,x^4+56\,e^5\,x^5)+$$
$$286\,a^3\,b^4\,x^4\,(252\,d^5+1050\,d^4\,e\,x+1800\,d^3\,e^2\,x^2+1575\,d^2\,e^3\,x^3+700\,d\,e^4\,x^4+126\,e^5\,x^5)+$$
$$78\,a^2\,b^5\,x^5\,(462\,d^5+1980\,d^4\,e\,x+3465\,d^3\,e^2\,x^2+3080\,d^2\,e^3\,x^3+1386\,d\,e^4\,x^4+252\,e^5\,x^5)+$$
$$13\,a\,b^6\,x^6\,(792\,d^5+3465\,d^4\,e\,x+6160\,d^3\,e^2\,x^2+5544\,d^2\,e^3\,x^3+2520\,d\,e^4\,x^4+462\,e^5\,x^5)+$$
$$b^7\,x^7\,(1287\,d^5+5720\,d^4\,e\,x+10\,296\,d^3\,e^2\,x^2+9360\,d^2\,e^3\,x^3+4290\,d\,e^4\,x^4+792\,e^5\,x^5)\big)$$

Problem 1918: Result more than twice size of optimal antiderivative.

$$\int (a+b\,x)\,(d+e\,x)^4\,(a^2+2\,a\,b\,x+b^2\,x^2)^3\,dx$$

Optimal (type 1, 119 leaves, 3 steps):

$$\frac{(b\,d-a\,e)^4\,(a+b\,x)^8}{8\,b^5}+\frac{4\,e\,(b\,d-a\,e)^3\,(a+b\,x)^9}{9\,b^5}+\frac{3\,e^2\,(b\,d-a\,e)^2\,(a+b\,x)^{10}}{5\,b^5}+\frac{4\,e^3\,(b\,d-a\,e)\,(a+b\,x)^{11}}{11\,b^5}+\frac{e^4\,(a+b\,x)^{12}}{12\,b^5}$$

Result (type 1, 405 leaves):

$$\frac{1}{3960}\,x\,\big(792\,a^7\,(5\,d^4+10\,d^3\,e\,x+10\,d^2\,e^2\,x^2+5\,d\,e^3\,x^3+e^4\,x^4)+$$
$$924\,a^6\,b\,x\,(15\,d^4+40\,d^3\,e\,x+45\,d^2\,e^2\,x^2+24\,d\,e^3\,x^3+5\,e^4\,x^4)+$$
$$792\,a^5\,b^2\,x^2\,(35\,d^4+105\,d^3\,e\,x+126\,d^2\,e^2\,x^2+70\,d\,e^3\,x^3+15\,e^4\,x^4)+$$
$$495\,a^4\,b^3\,x^3\,(70\,d^4+224\,d^3\,e\,x+280\,d^2\,e^2\,x^2+160\,d\,e^3\,x^3+35\,e^4\,x^4)+$$
$$220\,a^3\,b^4\,x^4\,(126\,d^4+420\,d^3\,e\,x+540\,d^2\,e^2\,x^2+315\,d\,e^3\,x^3+70\,e^4\,x^4)+$$
$$66\,a^2\,b^5\,x^5\,(210\,d^4+720\,d^3\,e\,x+945\,d^2\,e^2\,x^2+560\,d\,e^3\,x^3+126\,e^4\,x^4)+$$
$$12\,a\,b^6\,x^6\,(330\,d^4+1155\,d^3\,e\,x+1540\,d^2\,e^2\,x^2+924\,d\,e^3\,x^3+210\,e^4\,x^4)+$$
$$b^7\,x^7\,(495\,d^4+1760\,d^3\,e\,x+2376\,d^2\,e^2\,x^2+1440\,d\,e^3\,x^3+330\,e^4\,x^4)\big)$$

Problem 1919: Result more than twice size of optimal antiderivative.

$$\int (a+b\,x)\,(d+e\,x)^3\,(a^2+2\,a\,b\,x+b^2\,x^2)^3\,dx$$

Optimal (type 1, 92 leaves, 3 steps):

$$\frac{(b\,d-a\,e)^3\,(a+b\,x)^8}{8\,b^4}+\frac{e\,(b\,d-a\,e)^2\,(a+b\,x)^9}{3\,b^4}+\frac{3\,e^2\,(b\,d-a\,e)\,(a+b\,x)^{10}}{10\,b^4}+\frac{e^3\,(a+b\,x)^{11}}{11\,b^4}$$

Result (type 1, 360 leaves):

$$a^7 d^3 x + \frac{1}{2} a^6 d^2 \left(7 b d + 3 a e\right) x^2 + a^5 d \left(7 b^2 d^2 + 7 a b d e + a^2 e^2\right) x^3 + \frac{1}{4} a^4 \left(35 b^3 d^3 + 63 a b^2 d^2 e + 21 a^2 b d e^2 + a^3 e^3\right) x^4 + \frac{7}{5} a^3 b \left(5 b^3 d^3 + 15 a b^2 d^2 e + 9 a^2 b d e^2 + a^3 e^3\right) x^5 + \frac{7}{2} a^2 b^2 \left(b^3 d^3 + 5 a b^2 d^2 e + 5 a^2 b d e^2 + a^3 e^3\right) x^6 + a b^3 \left(b^3 d^3 + 9 a b^2 d^2 e + 15 a^2 b d e^2 + 5 a^3 e^3\right) x^7 + \frac{1}{8} b^4 \left(b^3 d^3 + 21 a b^2 d^2 e + 63 a^2 b d e^2 + 35 a^3 e^3\right) x^8 + \frac{1}{3} b^5 e \left(b^2 d^2 + 7 a b d e + 7 a^2 e^2\right) x^9 + \frac{1}{10} b^6 e^2 \left(3 b d + 7 a e\right) x^{10} + \frac{1}{11} b^7 e^3 x^{11}$$

Problem 1920: Result more than twice size of optimal antiderivative.

$$\int (a + b x) (d + e x)^2 \left(a^2 + 2 a b x + b^2 x^2\right)^3 dx$$

Optimal (type 1, 65 leaves, 3 steps):

$$\frac{(b d - a e)^2 (a + b x)^8}{8 b^3} + \frac{2 e (b d - a e) (a + b x)^9}{9 b^3} + \frac{e^2 (a + b x)^{10}}{10 b^3}$$

Result (type 1, 229 leaves):

$$\frac{1}{360} x \left(120 a^7 \left(3 d^2 + 3 d e x + e^2 x^2\right) + 210 a^6 b x \left(6 d^2 + 8 d e x + 3 e^2 x^2\right) + 252 a^5 b^2 x^2 \left(10 d^2 + 15 d e x + 6 e^2 x^2\right) + 210 a^4 b^3 x^3 \left(15 d^2 + 24 d e x + 10 e^2 x^2\right) + 120 a^3 b^4 x^4 \left(21 d^2 + 35 d e x + 15 e^2 x^2\right) + 45 a^2 b^5 x^5 \left(28 d^2 + 48 d e x + 21 e^2 x^2\right) + 10 a b^6 x^6 \left(36 d^2 + 63 d e x + 28 e^2 x^2\right) + b^7 x^7 \left(45 d^2 + 80 d e x + 36 e^2 x^2\right)\right)$$

Problem 1921: Result more than twice size of optimal antiderivative.

$$\int (a + b x) (d + e x) \left(a^2 + 2 a b x + b^2 x^2\right)^3 dx$$

Optimal (type 1, 38 leaves, 3 steps):

$$\frac{(b d - a e) (a + b x)^8}{8 b^2} + \frac{e (a + b x)^9}{9 b^2}$$

Result (type 1, 151 leaves):

$$a^7 d x + \frac{1}{2} a^6 \left(7 b d + a e\right) x^2 + \frac{7}{3} a^5 b \left(3 b d + a e\right) x^3 + \frac{7}{4} a^4 b^2 \left(5 b d + 3 a e\right) x^4 + 7 a^3 b^3 \left(b d + a e\right) x^5 + \frac{7}{6} a^2 b^4 \left(3 b d + 5 a e\right) x^6 + a b^5 \left(b d + 3 a e\right) x^7 + \frac{1}{8} b^6 \left(b d + 7 a e\right) x^8 + \frac{1}{9} b^7 e x^9$$

Problem 1924: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x) \left(a^2+2 a b x+b^2 x^2\right)^3}{(d+e x)^2} \, dx$$

Optimal (type 3, 186 leaves, 3 steps):

$$-\frac{21 b^2 (b d-a e)^5 x}{e^7}+\frac{(b d-a e)^7}{e^8 (d+e x)}+\frac{35 b^3 (b d-a e)^4 (d+e x)^2}{2 e^8}-\frac{35 b^4 (b d-a e)^3 (d+e x)^3}{3 e^8}+\frac{21 b^5 (b d-a e)^2 (d+e x)^4}{4 e^8}-\frac{7 b^6 (b d-a e) (d+e x)^5}{5 e^8}+\frac{b^7 (d+e x)^6}{6 e^8}+\frac{7 b (b d-a e)^6 \text{Log}[d+e x]}{e^8}$$

Result (type 3, 387 leaves):

$$\frac{1}{60 e^8 (d+e x)} \left(420 a^6 b d e^6-60 a^7 e^7+1260 a^5 b^2 e^5 \left(-d^2+d e x+e^2 x^2\right)+1050 a^4 b^3 e^4 \left(2 d^3-4 d^2 e x-3 d e^2 x^2+e^3 x^3\right)+700 a^3 b^4 e^3 \left(-3 d^4+9 d^3 e x+6 d^2 e^2 x^2-2 d e^3 x^3+e^4 x^4\right)+105 a^2 b^5 e^2 \left(12 d^5-48 d^4 e x-30 d^3 e^2 x^2+10 d^2 e^3 x^3-5 d e^4 x^4+3 e^5 x^5\right)+42 a b^6 e \left(-10 d^6+50 d^5 e x+30 d^4 e^2 x^2-10 d^3 e^3 x^3+5 d^2 e^4 x^4-3 d e^5 x^5+2 e^6 x^6\right)+b^7 \left(60 d^7-360 d^6 e x-210 d^5 e^2 x^2+70 d^4 e^3 x^3-35 d^3 e^4 x^4+21 d^2 e^5 x^5-14 d e^6 x^6+10 e^7 x^7\right)+420 b (b d-a e)^6 (d+e x) \text{Log}[d+e x]\right)$$

Problem 1925: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x) \left(a^2+2 a b x+b^2 x^2\right)^3}{(d+e x)^3} \, dx$$

Optimal (type 3, 185 leaves, 3 steps):

$$\frac{35 b^3 (b d-a e)^4 x}{e^7}+\frac{(b d-a e)^7}{2 e^8 (d+e x)^2}-\frac{7 b (b d-a e)^6}{e^8 (d+e x)}-\frac{35 b^4 (b d-a e)^3 (d+e x)^2}{2 e^8}+\frac{7 b^5 (b d-a e)^2 (d+e x)^3}{e^8}-\frac{7 b^6 (b d-a e) (d+e x)^4}{4 e^8}+\frac{b^7 (d+e x)^5}{5 e^8}-\frac{21 b^2 (b d-a e)^5 \text{Log}[d+e x]}{e^8}$$

Result (type 3, 388 leaves):

$$\frac{1}{20 e^8 (d+e x)^2} \left(-10 a^7 e^7-70 a^6 b e^6 (d+2 e x)+210 a^5 b^2 d e^5 (3 d+4 e x)+350 a^4 b^3 e^4 \left(-5 d^3-4 d^2 e x+4 d e^2 x^2+2 e^3 x^3\right)+350 a^3 b^4 e^3 \left(7 d^4+2 d^3 e x-11 d^2 e^2 x^2-4 d e^3 x^3+e^4 x^4\right)+70 a^2 b^5 e^2 \left(-27 d^5+6 d^4 e x+63 d^3 e^2 x^2+20 d^2 e^3 x^3-5 d e^4 x^4+2 e^5 x^5\right)+35 a b^6 e \left(22 d^6-16 d^5 e x-68 d^4 e^2 x^2-20 d^3 e^3 x^3+5 d^2 e^4 x^4-2 d e^5 x^5+e^6 x^6\right)+b^7 \left(-130 d^7+160 d^6 e x+500 d^5 e^2 x^2+140 d^4 e^3 x^3-35 d^3 e^4 x^4+14 d^2 e^5 x^5-7 d e^6 x^6+4 e^7 x^7\right)-420 b^2 (b d-a e)^5 (d+e x)^2 \text{Log}[d+e x]\right)$$

Problem 1946: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x) (d+e x)^3}{\left(a^2+2 a b x+b^2 x^2\right)^3} \, dx$$

Optimal (type 1, 28 leaves, 2 steps):

$$-\frac{(d+e x)^4}{4 (b d-a e) (a+b x)^4}$$

Result (type 1, 91 leaves):

$$-\frac{1}{4 b^4 (a+b x)^4}\left(a^3 e^3+a^2 b e^2 (d+4 e x)+a b^2 e \left(d^2+4 d e x+6 e^2 x^2\right)+b^3 \left(d^3+4 d^2 e x+6 d e^2 x^2+4 e^3 x^3\right)\right)$$

Problem 1981: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x) \left(a^2+2 a b x+b^2 x^2\right)^{3/2}}{(d+e x)^6} \, dx$$

Optimal (type 2, 41 leaves, 1 step):

$$\frac{\left(a^2+2 a b x+b^2 x^2\right)^{5/2}}{5 (b d-a e) (d+e x)^5}$$

Result (type 2, 158 leaves):

$$-\left(\left(\sqrt{(a+b x)^2} \left(a^4 e^4+a^3 b e^3 (d+5 e x)+a^2 b^2 e^2 \left(d^2+5 d e x+10 e^2 x^2\right)+a b^3 e \left(d^3+5 d^2 e x+10 d e^2 x^2+10 e^3 x^3\right)+b^4 \left(d^4+5 d^3 e x+10 d^2 e^2 x^2+10 d e^3 x^3+5 e^4 x^4\right)\right)\right) \Big/ \left(5 e^5 (a+b x) (d+e x)^5\right)\right)$$

Problem 1988: Result more than twice size of optimal antiderivative.

$$\int (a+b x) (d+e x)^9 \left(a^2+2 a b x+b^2 x^2\right)^{5/2} \, dx$$

Optimal (type 2, 362 leaves, 4 steps):

$$\frac{(b d-a e)^6 (d+e x)^{10} \sqrt{a^2+2 a b x+b^2 x^2}}{10 e^7 (a+b x)}-\frac{6 b (b d-a e)^5 (d+e x)^{11} \sqrt{a^2+2 a b x+b^2 x^2}}{11 e^7 (a+b x)}+\frac{5 b^2 (b d-a e)^4 (d+e x)^{12} \sqrt{a^2+2 a b x+b^2 x^2}}{4 e^7 (a+b x)}-\frac{20 b^3 (b d-a e)^3 (d+e x)^{13} \sqrt{a^2+2 a b x+b^2 x^2}}{13 e^7 (a+b x)}+\frac{15 b^4 (b d-a e)^2 (d+e x)^{14} \sqrt{a^2+2 a b x+b^2 x^2}}{14 e^7 (a+b x)}-\frac{2 b^5 (b d-a e) (d+e x)^{15} \sqrt{a^2+2 a b x+b^2 x^2}}{5 e^7 (a+b x)}+\frac{b^6 (d+e x)^{16} \sqrt{a^2+2 a b x+b^2 x^2}}{16 e^7 (a+b x)}$$

Result (type 2, 756 leaves):

$$\frac{1}{80080 (a+b x)} x \sqrt{(a+b x)^2} \left(8008 a^6 \left(10 d^9+45 d^8 e x+120 d^7 e^2 x^2+210 d^6 e^3 x^3+252 d^5 e^4 x^4+210 d^4 e^5 x^5+120 d^3 e^6 x^6+45 d^2 e^7 x^7+10 d e^8 x^8+e^9 x^9\right)+4368 a^5 b x \left(55 d^9+330 d^8 e x+990 d^7 e^2 x^2+1848 d^6 e^3 x^3+2310 d^5 e^4 x^4+1980 d^4 e^5 x^5+1155 d^3 e^6 x^6+440 d^2 e^7 x^7+99 d e^8 x^8+10 e^9 x^9\right)+1820 a^4 b^2 x^2 \left(220 d^9+1485 d^8 e x+4752 d^7 e^2 x^2+9240 d^6 e^3 x^3+11880 d^5 e^4 x^4+10395 d^4 e^5 x^5+6160 d^3 e^6 x^6+2376 d^2 e^7 x^7+540 d e^8 x^8+55 e^9 x^9\right)+560 a^3 b^3 x^3 \left(715 d^9+5148 d^8 e x+17160 d^7 e^2 x^2+34320 d^6 e^3 x^3+45045 d^5 e^4 x^4+40040 d^4 e^5 x^5+24024 d^3 e^6 x^6+9360 d^2 e^7 x^7+2145 d e^8 x^8+220 e^9 x^9\right)+120 a^2 b^4 x^4 \left(2002 d^9+15015 d^8 e x+51480 d^7 e^2 x^2+105105 d^6 e^3 x^3+140140 d^5 e^4 x^4+126126 d^4 e^5 x^5+76440 d^3 e^6 x^6+30030 d^2 e^7 x^7+6930 d e^8 x^8+715 e^9 x^9\right)+16 a b^5 x^5 \left(5005 d^9+38610 d^8 e x+135135 d^7 e^2 x^2+280280 d^6 e^3 x^3+378378 d^5 e^4 x^4+343980 d^4 e^5 x^5+210210 d^3 e^6 x^6+83160 d^2 e^7 x^7+19305 d e^8 x^8+2002 e^9 x^9\right)+b^6 x^6 \left(11440 d^9+90090 d^8 e x+320320 d^7 e^2 x^2+672672 d^6 e^3 x^3+917280 d^5 e^4 x^4+840840 d^4 e^5 x^5+517440 d^3 e^6 x^6+205920 d^2 e^7 x^7+48048 d e^8 x^8+5005 e^9 x^9\right)\right)$$

Problem 2005: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x) \left(a^2+2 a b x+b^2 x^2\right)^{5/2}}{(d+e x)^8} \, dx$$

Optimal (type 2, 41 leaves, 1 step):

$$\frac{\left(a^2+2 a b x+b^2 x^2\right)^{7/2}}{7 (b d-a e) (d+e x)^7}$$

Result (type 2, 289 leaves):

$$-\frac{1}{7 e^7 (a+b x) (d+e x)^7} \sqrt{(a+b x)^2} \left(a^6 e^6+a^5 b e^5 (d+7 e x)+a^4 b^2 e^4 \left(d^2+7 d e x+21 e^2 x^2\right)+a^3 b^3 e^3 \left(d^3+7 d^2 e x+21 d e^2 x^2+35 e^3 x^3\right)+a^2 b^4 e^2 \left(d^4+7 d^3 e x+21 d^2 e^2 x^2+35 d e^3 x^3+35 e^4 x^4\right)+a b^5 e \left(d^5+7 d^4 e x+21 d^3 e^2 x^2+35 d^2 e^3 x^3+35 d e^4 x^4+21 e^5 x^5\right)+b^6 \left(d^6+7 d^5 e x+21 d^4 e^2 x^2+35 d^3 e^3 x^3+35 d^2 e^4 x^4+21 d e^5 x^5+7 e^6 x^6\right)\right)$$

Problem 2006: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b x)\left(a^2+2 a b x+b^2 x^2\right)^{5/2}}{(d+e x)^9}\,dx$$

Optimal (type 2, 98 leaves, 4 steps):

$$\frac{(a+b x)^6\sqrt{a^2+2 a b x+b^2 x^2}}{8\,(b d-a e)\,(d+e x)^8}+\frac{b\,(a+b x)^6\sqrt{a^2+2 a b x+b^2 x^2}}{56\,(b d-a e)^2\,(d+e x)^7}$$

Result (type 2, 295 leaves):

$$-\frac{1}{56 e^7\,(a+b x)\,(d+e x)^8}\sqrt{(a+b x)^2}\,\Big(7 a^6 e^6+6 a^5 b e^5\,(d+8 e x)+5 a^4 b^2 e^4\,\left(d^2+8 d e x+28 e^2 x^2\right)+4 a^3 b^3 e^3\left(d^3+8 d^2 e x+28 d e^2 x^2+56 e^3 x^3\right)+3 a^2 b^4 e^2\left(d^4+8 d^3 e x+28 d^2 e^2 x^2+56 d e^3 x^3+70 e^4 x^4\right)+2 a b^5 e\left(d^5+8 d^4 e x+28 d^3 e^2 x^2+56 d^2 e^3 x^3+70 d e^4 x^4+56 e^5 x^5\right)+b^6\left(d^6+8 d^5 e x+28 d^4 e^2 x^2+56 d^3 e^3 x^3+70 d^2 e^4 x^4+56 d e^5 x^5+28 e^6 x^6\right)\Big)$$

Problem 2146: Result more than twice size of optimal antiderivative.

$$\int (a+b x)\,(d+e x)^m\left(a^2+2 a b x+b^2 x^2\right)^3\,dx$$

Optimal (type 3, 239 leaves, 3 steps):

$$-\frac{(b d-a e)^7\,(d+e x)^{1+m}}{e^8\,(1+m)}+\frac{7 b\,(b d-a e)^6\,(d+e x)^{2+m}}{e^8\,(2+m)}-\frac{21 b^2\,(b d-a e)^5\,(d+e x)^{3+m}}{e^8\,(3+m)}+\frac{35 b^3\,(b d-a e)^4\,(d+e x)^{4+m}}{e^8\,(4+m)}-\frac{35 b^4\,(b d-a e)^3\,(d+e x)^{5+m}}{e^8\,(5+m)}+\frac{21 b^5\,(b d-a e)^2\,(d+e x)^{6+m}}{e^8\,(6+m)}-\frac{7 b^6\,(b d-a e)\,(d+e x)^{7+m}}{e^8\,(7+m)}+\frac{b^7\,(d+e x)^{8+m}}{e^8\,(8+m)}$$

Result (type 3, 896 leaves):

$$\frac{1}{e^8 (1+m) (2+m) (3+m) (4+m) (5+m) (6+m) (7+m) (8+m)}$$
$$(d+e x)^{1+m} \Big(a^7 e^7 (40320+69264 m+48860 m^2+18424 m^3+4025 m^4+511 m^5+35 m^6+m^7) - 7 a^6 b e^6 (20160+24552 m+12154 m^2+3135 m^3+445 m^4+33 m^5+m^6) (d-e (1+m) x) + 21 a^5 b^2 e^5 (6720+5944 m+2070 m^2+355 m^3+30 m^4+m^5) (2 d^2-2 d e (1+m) x+e^2 (2+3 m+m^2) x^2) + 35 a^4 b^3 e^4 (1680+1066 m+251 m^2+26 m^3+m^4) (-6 d^3+6 d^2 e (1+m) x-3 d e^2 (2+3 m+m^2) x^2+e^3 (6+11 m+6 m^2+m^3) x^3) + 35 a^3 b^4 e^3 (336+146 m+21 m^2+m^3) (24 d^4-24 d^3 e (1+m) x+12 d^2 e^2 (2+3 m+m^2) x^2 - 4 d e^3 (6+11 m+6 m^2+m^3) x^3+e^4 (24+50 m+35 m^2+10 m^3+m^4) x^4) + 21 a^2 b^5 e^2 (56+15 m+m^2) (-120 d^5+120 d^4 e (1+m) x-60 d^3 e^2 (2+3 m+m^2) x^2+20 d^2 e^3 (6+11 m+6 m^2+m^3) x^3-5 d e^4 (24+50 m+35 m^2+10 m^3+m^4) x^4+e^5 (120+274 m+225 m^2+85 m^3+15 m^4+m^5) x^5) + 7 a b^6 e (8+m) (720 d^6-720 d^5 e (1+m) x+360 d^4 e^2 (2+3 m+m^2) x^2-120 d^3 e^3 (6+11 m+6 m^2+m^3) x^3 + 30 d^2 e^4 (24+50 m+35 m^2+10 m^3+m^4) x^4-6 d e^5 (120+274 m+225 m^2+85 m^3+15 m^4+m^5) x^5 + e^6 (720+1764 m+1624 m^2+735 m^3+175 m^4+21 m^5+m^6) x^6) - b^7 (5040 d^7-5040 d^6 e (1+m) x+2520 d^5 e^2 (2+3 m+m^2) x^2-840 d^4 e^3 (6+11 m+6 m^2+m^3) x^3 + 210 d^3 e^4 (24+50 m+35 m^2+10 m^3+m^4) x^4-42 d^2 e^5 (120+274 m+225 m^2+85 m^3+15 m^4+m^5) x^5+7 d e^6 (720+1764 m+1624 m^2+735 m^3+175 m^4+21 m^5+m^6) x^6 - e^7 (5040+13068 m+13132 m^2+6769 m^3+1960 m^4+322 m^5+28 m^6+m^7) x^7)\Big)$$

Problem 2147: Result more than twice size of optimal antiderivative.

$$\int (a+b x) (d+e x)^m \left(a^2+2 a b x+b^2 x^2\right)^2 \, dx$$

Optimal (type 3, 175 leaves, 3 steps):

$$-\frac{(b d-a e)^5 (d+e x)^{1+m}}{e^6 (1+m)}+\frac{5 b (b d-a e)^4 (d+e x)^{2+m}}{e^6 (2+m)}-\frac{10 b^2 (b d-a e)^3 (d+e x)^{3+m}}{e^6 (3+m)}+\frac{10 b^3 (b d-a e)^2 (d+e x)^{4+m}}{e^6 (4+m)}-\frac{5 b^4 (b d-a e) (d+e x)^{5+m}}{e^6 (5+m)}+\frac{b^5 (d+e x)^{6+m}}{e^6 (6+m)}$$

Result (type 3, 449 leaves):

$$\frac{1}{e^6 (1+m) (2+m) (3+m) (4+m) (5+m) (6+m)}$$
$$(d+e x)^{1+m} \Big(a^5 e^5 (720+1044 m+580 m^2+155 m^3+20 m^4+m^5) - 5 a^4 b e^4 (360+342 m+119 m^2+18 m^3+m^4) (d-e (1+m) x) + 10 a^3 b^2 e^3 (120+74 m+15 m^2+m^3) (2 d^2-2 d e (1+m) x+e^2 (2+3 m+m^2) x^2) + 10 a^2 b^3 e^2 (30+11 m+m^2) (-6 d^3+6 d^2 e (1+m) x-3 d e^2 (2+3 m+m^2) x^2+e^3 (6+11 m+6 m^2+m^3) x^3) + 5 a b^4 e (6+m) (24 d^4-24 d^3 e (1+m) x+12 d^2 e^2 (2+3 m+m^2) x^2 - 4 d e^3 (6+11 m+6 m^2+m^3) x^3+e^4 (24+50 m+35 m^2+10 m^3+m^4) x^4) - b^5 (120 d^5-120 d^4 e (1+m) x+60 d^3 e^2 (2+3 m+m^2) x^2-20 d^2 e^3 (6+11 m+6 m^2+m^3) x^3 + 5 d e^4 (24+50 m+35 m^2+10 m^3+m^4) x^4-e^5 (120+274 m+225 m^2+85 m^3+15 m^4+m^5) x^5)\Big)$$

Problem 2150: Unable to integrate problem.

$$\int \frac{(a+b x) (d+e x)^m}{\left(a^2+2 a b x+b^2 x^2\right)^2} \, dx$$

Optimal (type 5, 54 leaves, 2 steps):

$$-\frac{e^2 (d+e x)^{1+m} \text{Hypergeometric2F1}\left[3, 1+m, 2+m, \frac{b (d+e x)}{b d-a e}\right]}{(b d-a e)^3 (1+m)}$$

Result (type 8, 33 leaves):

$$\int \frac{(a+b x) (d+e x)^m}{\left(a^2+2 a b x+b^2 x^2\right)^2} \, dx$$

Problem 2155: Unable to integrate problem.

$$\int \frac{(a+b x) (d+e x)^m}{\left(a^2+2 a b x+b^2 x^2\right)^{3/2}} \, dx$$

Optimal (type 5, 76 leaves, 3 steps):

$$\frac{e (a+b x) (d+e x)^{1+m} \text{Hypergeometric2F1}\left[2, 1+m, 2+m, \frac{b (d+e x)}{b d-a e}\right]}{(b d-a e)^2 (1+m) \sqrt{a^2+2 a b x+b^2 x^2}}$$

Result (type 8, 35 leaves):

$$\int \frac{(a+b x) (d+e x)^m}{\left(a^2+2 a b x+b^2 x^2\right)^{3/2}} \, dx$$

Problem 2156: Unable to integrate problem.

$$\int \frac{(a+b x) (d+e x)^m}{\left(a^2+2 a b x+b^2 x^2\right)^{5/2}} \, dx$$

Optimal (type 5, 78 leaves, 3 steps):

$$\frac{e^3 (a+b x) (d+e x)^{1+m} \text{Hypergeometric2F1}\left[4, 1+m, 2+m, \frac{b (d+e x)}{b d-a e}\right]}{(b d-a e)^4 (1+m) \sqrt{a^2+2 a b x+b^2 x^2}}$$

Result (type 8, 35 leaves):

$$\int \frac{(a+b x) (d+e x)^m}{\left(a^2+2 a b x+b^2 x^2\right)^{5/2}} \, dx$$

Problem 2172: Result unnecessarily involves imaginary or complex numbers.

$$\int (d+e x)^3 (f+g x) \sqrt{c d^2-b d e-b e^2 x-c e^2 x^2}\, dx$$

Optimal (type 3, 414 leaves, 7 steps):

$$\frac{1}{512 c^5 e}7 (2 c d-b e)^3 (4 c e f+2 c d g-3 b e g) (b+2 c x) \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}-\frac{1}{192 c^4 e^2}7 (2 c d-b e)^2 (4 c e f+2 c d g-3 b e g) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}-\frac{1}{160 c^3 e^2}7 (2 c d-b e) (4 c e f+2 c d g-3 b e g) (d+e x) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}-\frac{(4 c e f+2 c d g-3 b e g) (d+e x)^2 \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}}{20 c^2 e^2}-\frac{g (d+e x)^3 \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}}{6 c e^2}+\frac{1}{1024 c^{11/2} e^2}7 (2 c d-b e)^5 (4 c e f+2 c d g-3 b e g) \text{ArcTan}\left[\frac{e (b+2 c x)}{2 \sqrt{c} \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}\right]$$

Result (type 3, 500 leaves):

$$\frac{1}{15360} \sqrt{(d+e x) (-b e+c (d-e x))} \left(\frac{1}{c^5 e^2}2 \left(315 b^5 e^5 g-420 b^4 c e^4 (e f+7 d g)-512 c^5 d^4 (17 e f+11 d g)+56 b^3 c^2 d e^3 (65 e f+193 d g)+16 b c^4 d^3 e (1118 e f+1047 d g)-16 b^2 c^3 d^2 e^2 (749 e f+1213 d g)\right)+\frac{1}{c^4 e}4 \left(-105 b^4 e^4 g-240 c^4 d^3 (-2 e f+7 d g)+28 b^3 c e^3 (5 e f+31 d g)+16 b c^3 d^2 e (179 e f+227 d g)-8 b^2 c^2 d e^2 (133 e f+335 d g)\right) x+\frac{1}{c^3}16 \left(21 b^3 e^3 g+128 c^3 d^2 (7 e f+d g)-4 b^2 c e^2 (7 e f+38 d g)+4 b c^2 d e (46 e f+95 d g)\right) x^2+\frac{1}{c^2}32 e \left(-9 b^2 e^2 g+4 b c e (3 e f+14 d g)+20 c^2 d (18 e f+17 d g)\right) x^3+\frac{256 e^2 (b e g+12 c (e f+3 d g)) x^4}{c}+2560 e^3 g x^5-\left(105 i (-2 c d+b e)^5 (4 c e f+2 c d g-3 b e g) \text{Log}\left[-\frac{i e (b+2 c x)}{\sqrt{c}}+2 \sqrt{d+e x} \sqrt{-b e+c (d-e x)}\right]\right)\Big/\left(c^{11/2} e^2 \sqrt{d+e x} \sqrt{-b e+c (d-e x)}\right)\right)$$

Problem 2173: Result unnecessarily involves imaginary or complex numbers.

$$\int (d+e x)^2 (f+g x) \sqrt{c d^2-b d e-b e^2 x-c e^2 x^2}\, dx$$

Optimal (type 3, 339 leaves, 7 steps):

$$\frac{1}{128\, c^4\, e}(2\, c\, d-b\, e)^2\, (10\, c\, e\, f+4\, c\, d\, g-7\, b\, e\, g)\, (b+2\, c\, x)\, \sqrt{d\, (c\, d-b\, e)-b\, e^2\, x-c\, e^2\, x^2}-\frac{1}{48\, c^3\, e^2}(2\, c\, d-b\, e)\, (10\, c\, e\, f+4\, c\, d\, g-7\, b\, e\, g)\, \left(d\, (c\, d-b\, e)-b\, e^2\, x-c\, e^2\, x^2\right)^{3/2}-\frac{(10\, c\, e\, f+4\, c\, d\, g-7\, b\, e\, g)\, (d+e\, x)\, \left(d\, (c\, d-b\, e)-b\, e^2\, x-c\, e^2\, x^2\right)^{3/2}}{40\, c^2\, e^2}-\frac{g\, (d+e\, x)^2\, \left(d\, (c\, d-b\, e)-b\, e^2\, x-c\, e^2\, x^2\right)^{3/2}}{5\, c\, e^2}+\frac{1}{256\, c^{9/2}\, e^2}(2\, c\, d-b\, e)^4\, (10\, c\, e\, f+4\, c\, d\, g-7\, b\, e\, g)\, \text{ArcTan}\left[\frac{e\, (b+2\, c\, x)}{2\, \sqrt{c}\, \sqrt{d\, (c\, d-b\, e)-b\, e^2\, x-c\, e^2\, x^2}}\right]$$

Result (type 3, 376 leaves):

$$\frac{1}{3840}\sqrt{(d+e\, x)\, (-b\, e+c\, (d-e\, x))}\, \left(-\frac{210\, b^4\, e^2\, g}{c^4}-\frac{256\, d^3\, (10\, e\, f+7\, d\, g)}{e^2}+\frac{20\, b^3\, e\, (15\, e\, f+76\, d\, g)}{c^3}+\frac{16\, b\, d^2\, (285\, e\, f+274\, d\, g)}{c\, e}-\frac{8\, b^2\, d\, (250\, e\, f+499\, d\, g)}{c^2}+\frac{1}{c^3\, e}4\, \left(35\, b^3\, e^3\, g-120\, c^3\, d^2\, (-3\, e\, f+2\, d\, g)-2\, b^2\, c\, e^2\, (25\, e\, f+108\, d\, g)+4\, b\, c^2\, d\, e\, (70\, e\, f+109\, d\, g)\right)\, x+\frac{16\, \left(-7\, b^2\, e^2\, g+32\, c^2\, d\, (5\, e\, f+2\, d\, g)+2\, b\, c\, e\, (5\, e\, f+18\, d\, g)\right)\, x^2}{c^2}+\frac{96\, e\, (b\, e\, g+10\, c\, (e\, f+2\, d\, g))\, x^3}{c}+768\, e^2\, g\, x^4+\left(15\, i\, (-2\, c\, d+b\, e)^4\, (10\, c\, e\, f+4\, c\, d\, g-7\, b\, e\, g)\, \text{Log}\left[-\frac{i\, e\, (b+2\, c\, x)}{\sqrt{c}}+2\, \sqrt{d+e\, x}\, \sqrt{-b\, e+c\, (d-e\, x)}\right]\right)\Big/\left(c^{9/2}\, e^2\, \sqrt{d+e\, x}\, \sqrt{-b\, e+c\, (d-e\, x)}\right)\right)$$

Problem 2174: Result unnecessarily involves imaginary or complex numbers.

$$\int (d+e\, x)\, (f+g\, x)\, \sqrt{c\, d^2-b\, d\, e-b\, e^2\, x-c\, e^2\, x^2}\, dx$$

Optimal (type 3, 223 leaves, 4 steps):

$$\frac{1}{64\, c^3\, e}(2\, c\, d-b\, e)\, (8\, c\, e\, f+2\, c\, d\, g-5\, b\, e\, g)\, (b+2\, c\, x)\, \sqrt{d\, (c\, d-b\, e)-b\, e^2\, x-c\, e^2\, x^2}+\frac{(5\, b\, e\, g-8\, c\, (e\, f+d\, g)-6\, c\, e\, g\, x)\, \left(d\, (c\, d-b\, e)-b\, e^2\, x-c\, e^2\, x^2\right)^{3/2}}{24\, c^2\, e^2}+\frac{1}{128\, c^{7/2}\, e^2}(2\, c\, d-b\, e)^3\, (8\, c\, e\, f+2\, c\, d\, g-5\, b\, e\, g)\, \text{ArcTan}\left[\frac{e\, (b+2\, c\, x)}{2\, \sqrt{c}\, \sqrt{d\, (c\, d-b\, e)-b\, e^2\, x-c\, e^2\, x^2}}\right]$$

Result (type 3, 270 leaves):

$$\frac{1}{384}\sqrt{(d+e\,x)\,(-b\,e+c\,(d-e\,x))}\left(\frac{30\,b^3\,e\,g}{c^3}-\frac{128\,d^2\,(e\,f+d\,g)}{e^2}-\frac{8\,b^2\,(6\,e\,f+19\,d\,g)}{c^2}+\frac{8\,b\,d\,(28\,e\,f+29\,d\,g)}{c\,e}+4\left(-\frac{12\,d^2\,g}{e}+\frac{b\,e\,(8\,c\,f-5\,b\,g)}{c^2}+d\left(48\,f+\frac{20\,b\,g}{c}\right)\right)x+\frac{16\,(b\,e\,g+8\,c\,(e\,f+d\,g))\,x^2}{c}+96\,e\,g\,x^3-\left(3\,i\,(-2\,c\,d+b\,e)^3\,(8\,c\,e\,f+2\,c\,d\,g-5\,b\,e\,g)\,\mathrm{Log}\left[-\frac{i\,e\,(b+2\,c\,x)}{\sqrt{c}}+2\,\sqrt{d+e\,x}\,\sqrt{-b\,e+c\,(d-e\,x)}\right]\right)\Big/\left(c^{7/2}\,e^2\,\sqrt{d+e\,x}\,\sqrt{-b\,e+c\,(d-e\,x)}\right)\right)$$

Problem 2175: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(f+g\,x)\,\sqrt{c\,d^2-b\,d\,e-b\,e^2\,x-c\,e^2\,x^2}}{d+e\,x}\,dx$$

Optimal (type 3, 192 leaves, 4 steps):

$$\frac{(4\,c\,e\,f-2\,c\,d\,g-b\,e\,g)\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}{4\,c\,e^2}-\frac{g\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{3/2}}{2\,c\,e^2\,(d+e\,x)}+\frac{1}{8\,c^{3/2}\,e^2}(2\,c\,d-b\,e)\,(4\,c\,e\,f-2\,c\,d\,g-b\,e\,g)\,\mathrm{ArcTan}\left[\frac{e\,(b+2\,c\,x)}{2\,\sqrt{c}\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}\right]$$

Result (type 3, 157 leaves):

$$\frac{1}{8\,e^2}\sqrt{(d+e\,x)\,(-b\,e+c\,(d-e\,x))}\left(8\,e\,f-8\,d\,g+\frac{2\,b\,e\,g}{c}+4\,e\,g\,x-\left(i\,(2\,c\,d-b\,e)\,(-4\,c\,e\,f+2\,c\,d\,g+b\,e\,g)\,\mathrm{Log}\left[-\frac{i\,e\,(b+2\,c\,x)}{\sqrt{c}}+2\,\sqrt{d+e\,x}\,\sqrt{-b\,e+c\,(d-e\,x)}\right]\right)\Big/\left(c^{3/2}\,\sqrt{d+e\,x}\,\sqrt{-b\,e+c\,(d-e\,x)}\right)\right)$$

Problem 2176: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(f+g\,x)\,\sqrt{c\,d^2-b\,d\,e-b\,e^2\,x-c\,e^2\,x^2}}{(d+e\,x)^2}\,dx$$

Optimal (type 3, 200 leaves, 4 steps):

$$-\frac{(2 c e f-4 c d g+b e g) \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}{e^2 (2 c d-b e)}-\frac{2 (e f-d g) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}}{e^2 (2 c d-b e) (d+e x)^2}-\frac{(2 c e f-4 c d g+b e g) \operatorname{ArcTan}\left[\frac{e (b+2 c x)}{2 \sqrt{c} \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}\right]}{2 \sqrt{c} e^2}$$

Result (type 3, 147 leaves):

$$\frac{1}{2 e^2}\sqrt{(d+e x) (-b e+c (d-e x))} \left(2 g+\frac{4 (-e f+d g)}{d+e x}-\left(i (2 c e f-4 c d g+b e g) \operatorname{Log}\left[-\frac{i e (b+2 c x)}{\sqrt{c}}+2 \sqrt{d+e x} \sqrt{-b e+c (d-e x)}\right]\right)\Big/\left(\sqrt{c} \sqrt{d+e x} \sqrt{-b e+c (d-e x)}\right)\right)$$

Problem 2177: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(f+g x) \sqrt{c d^2-b d e-b e^2 x-c e^2 x^2}}{(d+e x)^3} \, dx$$

Optimal (type 3, 168 leaves, 4 steps):

$$-\frac{2 g \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}{e^2 (d+e x)}-\frac{2 (e f-d g) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}}{3 e^2 (2 c d-b e) (d+e x)^3}-\frac{\sqrt{c}\, g \operatorname{ArcTan}\left[\frac{e (b+2 c x)}{2 \sqrt{c} \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}\right]}{e^2}$$

Result (type 3, 164 leaves):

$$\frac{1}{3 e^2}\sqrt{(d+e x) (-b e+c (d-e x))} \left(\frac{2 (-e f+d g)}{(d+e x)^2}-\frac{2 (c e f-7 c d g+3 b e g)}{(-2 c d+b e) (d+e x)}-\frac{3 i \sqrt{c}\, g \operatorname{Log}\left[-\frac{i e (b+2 c x)}{\sqrt{c}}+2 \sqrt{d+e x} \sqrt{-b e+c (d-e x)}\right]}{\sqrt{d+e x} \sqrt{-b e+c (d-e x)}}\right)$$

Problem 2183: Result unnecessarily involves imaginary or complex numbers.

$$\int (d+e x)^3 (f+g x) \left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{3/2} \, dx$$

Optimal (type 3, 488 leaves, 8 steps):

$$\frac{1}{16384 c^6 e} 9 (2 c d - b e)^5 (16 c e f + 6 c d g - 11 b e g) (b + 2 c x) \sqrt{d (c d - b e) - b e^2 x - c e^2 x^2} + \frac{1}{2048 c^5 e} 3 (2 c d - b e)^3 (16 c e f + 6 c d g - 11 b e g) (b + 2 c x) \left(d (c d - b e) - b e^2 x - c e^2 x^2\right)^{3/2} - \frac{1}{640 c^4 e^2} 3 (2 c d - b e)^2 (16 c e f + 6 c d g - 11 b e g) \left(d (c d - b e) - b e^2 x - c e^2 x^2\right)^{5/2} - \frac{1}{448 c^3 e^2} 3 (2 c d - b e) (16 c e f + 6 c d g - 11 b e g) (d + e x) \left(d (c d - b e) - b e^2 x - c e^2 x^2\right)^{5/2} - \frac{1}{112 c^2 e^2} (16 c e f + 6 c d g - 11 b e g) (d + e x)^2 \left(d (c d - b e) - b e^2 x - c e^2 x^2\right)^{5/2} - \frac{g (d + e x)^3 \left(d (c d - b e) - b e^2 x - c e^2 x^2\right)^{5/2}}{8 c e^2} + \frac{1}{32768 c^{13/2} e^2} 9 (2 c d - b e)^7 (16 c e f + 6 c d g - 11 b e g) \operatorname{ArcTan}\left[\frac{e (b + 2 c x)}{2 \sqrt{c} \sqrt{d (c d - b e) - b e^2 x - c e^2 x^2}}\right]$$

Result (type 3, 739 leaves) :

$$\frac{1}{32768} \left((d + e x) (-b e + c (d - e x))\right)^{3/2} \left(\frac{1}{35 c^6 e^2 (d + e x) (-c d + b e + c e x)} 2 \left(-3465 b^7 e^7 g + 210 b^6 c e^6 (24 e f + 218 d g + 11 e g x) - 84 b^5 c^2 e^5 \left(3057 d^2 g + 2 e^2 x (20 f + 11 g x) + d e (760 f + 334 g x)\right) + 128 c^7 \left(1664 d^7 g + 320 d e^6 x^5 (7 f + 6 g x) + 80 e^7 x^6 (8 f + 7 g x) - 16 d^3 e^4 x^3 (175 f + 136 g x) + 8 d^2 e^5 x^4 (208 f + 175 g x) - 8 d^5 e^2 x (245 f + 176 g x) + d^6 e (2944 f + 945 g x) - 2 d^4 e^3 x^2 (2624 f + 1925 g x)\right) + 24 b^4 c^3 e^4 \left(32924 d^3 g + 2 e^3 x^2 (56 f + 33 g x) + 8 d e^2 x (203 f + 107 g x) + 3 d^2 e (4704 f + 1963 g x)\right) + 64 b c^6 e \left(-13647 d^6 g + 80 e^6 x^5 (20 f + 17 g x) + 6 d^4 e^2 x (-116 f + 123 g x) + 48 d e^5 x^4 (164 f + 135 g x) + 8 d^3 e^3 x^2 (1574 f + 1187 g x) + 8 d^2 e^4 x^3 (1882 f + 1483 g x) - 2 d^5 e (9812 f + 3263 g x)\right) - 16 b^3 c^4 e^3 \left(89587 d^4 g + 8 e^4 x^3 (18 f + 11 g x) + 8 d e^3 x^2 (222 f + 125 g x) + 12 d^2 e^2 x (960 f + 479 g x) + 4 d^3 e (15072 f + 5887 g x)\right) + 32 b^2 c^5 e^2 \left(47490 d^5 g + 8 e^5 x^4 (8 f + 5 g x) + 16 d e^4 x^3 (43 f + 25 g x) + 12 d^2 e^3 x^2 (308 f + 163 g x) + 8 d^3 e^2 x (1748 f + 809 g x) + d^4 e (48712 f + 17401 g x)\right)\right) + \left(9 i (2 c d - b e)^7 (16 c e f + 6 c d g - 11 b e g) \operatorname{Log}\left[-\frac{i e (b + 2 c x)}{\sqrt{c}} + 2 \sqrt{d + e x} \sqrt{-b e + c (d - e x)}\right]\right) \Big/ \left(c^{13/2} e^2 (d + e x)^{3/2} (-b e + c (d - e x))^{3/2}\right)\right)$$

Problem 2184: Result unnecessarily involves imaginary or complex numbers.

$$\int (d + e x)^2 (f + g x) \left(c d^2 - b d e - b e^2 x - c e^2 x^2\right)^{3/2} dx$$

Optimal (type 3, 413 leaves, 8 steps) :

$$\frac{1}{1024\,c^5\,e}(2\,c\,d-b\,e)^4\,(14\,c\,e\,f+4\,c\,d\,g-9\,b\,e\,g)\,(b+2\,c\,x)\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}+$$
$$\frac{1}{384\,c^4\,e}(2\,c\,d-b\,e)^2\,(14\,c\,e\,f+4\,c\,d\,g-9\,b\,e\,g)\,(b+2\,c\,x)\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{3/2}-$$
$$\frac{1}{120\,c^3\,e^2}(2\,c\,d-b\,e)\,(14\,c\,e\,f+4\,c\,d\,g-9\,b\,e\,g)\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{5/2}-$$
$$\frac{(14\,c\,e\,f+4\,c\,d\,g-9\,b\,e\,g)\,(d+e\,x)\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{5/2}}{84\,c^2\,e^2}-$$
$$\frac{g\,(d+e\,x)^2\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{5/2}}{7\,c\,e^2}+\frac{1}{2048\,c^{11/2}\,e^2}$$
$$(2\,c\,d-b\,e)^6\,(14\,c\,e\,f+4\,c\,d\,g-9\,b\,e\,g)\,\mathrm{ArcTan}\left[\frac{e\,(b+2\,c\,x)}{2\,\sqrt{c}\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}\right]$$

Result (type 3, 599 leaves):

$$\frac{1}{2048}\left((d+e\,x)\,(-b\,e+c\,(d-e\,x))\right)^{3/2}$$
$$\left(\frac{1}{105\,c^5\,e^2\,(d+e\,x)\,(-c\,d+b\,e+c\,e\,x)}2\,\left(945\,b^6\,e^6\,g-210\,b^5\,c\,e^5\,(7\,e\,f+50\,d\,g+3\,e\,g\,x)+\right.\right.$$
$$64\,c^6\,\left(432\,d^6\,g+112\,d\,e^5\,x^4\,(6\,f+5\,g\,x)+42\,d^5\,e\,(16\,f+5\,g\,x)+40\,e^6\,x^5\,(7\,f+6\,g\,x)-\right.$$
$$\left.2\,d^2\,e^4\,x^3\,(35\,f+24\,g\,x)-28\,d^3\,e^3\,x^2\,(48\,f+35\,g\,x)-3\,d^4\,e^2\,x\,(315\,f+208\,g\,x)\right)+$$
$$28\,b^4\,c^2\,e^4\,\left(1708\,d^2\,g+e^2\,x\,(35\,f+18\,g\,x)+d\,e\,(560\,f+226\,g\,x)\right)+$$
$$48\,b^2\,c^4\,e^2\,\left(3037\,d^4\,g+2\,e^4\,x^3\,(7\,f+4\,g\,x)+4\,d\,e^3\,x^2\,(35\,f+18\,g\,x)+\right.$$
$$\left.14\,d^2\,e^2\,x\,(52\,f+23\,g\,x)+4\,d^3\,e\,(763\,f+255\,g\,x)\right)-16\,b^3\,c^3\,e^3$$
$$\left(7090\,d^3\,g+e^3\,x^2\,(49\,f+27\,g\,x)+4\,d\,e^2\,x\,(147\,f+71\,g\,x)+2\,d^2\,e\,(2107\,f+786\,g\,x)\right)+$$
$$32\,b\,c^5\,e\,\left(-3054\,d^5\,g-123\,d^4\,e\,(35\,f+11\,g\,x)+12\,d^3\,e^2\,x\,(91\,f+75\,g\,x)+\right.$$
$$\left.\left.8\,e^5\,x^4\,(91\,f+75\,g\,x)+4\,d\,e^4\,x^3\,(707\,f+556\,g\,x)+2\,d^2\,e^3\,x^2\,(1911\,f+1409\,g\,x)\right)\right)+$$
$$\left(i\,(-2\,c\,d+b\,e)^6\,(14\,c\,e\,f+4\,c\,d\,g-9\,b\,e\,g)\,\mathrm{Log}\left[-\frac{i\,e\,(b+2\,c\,x)}{\sqrt{c}}+\right.\right.$$
$$\left.\left.\left.2\,\sqrt{d+e\,x}\,\sqrt{-b\,e+c\,(d-e\,x)}\right]\right)\Big/\left(c^{11/2}\,e^2\,(d+e\,x)^{3/2}\,(-b\,e+c\,(d-e\,x))^{3/2}\right)\right)$$

Problem 2185: Result unnecessarily involves imaginary or complex numbers.

$$\int (d+e\,x)\,(f+g\,x)\,\left(c\,d^2-b\,d\,e-b\,e^2\,x-c\,e^2\,x^2\right)^{3/2}\,dx$$

Optimal (type 3, 297 leaves, 5 steps):

$$\frac{1}{512\,c^4\,e}\left(2\,c\,d-b\,e\right)^3\left(12\,c\,e\,f+2\,c\,d\,g-7\,b\,e\,g\right)\left(b+2\,c\,x\right)\sqrt{d\left(c\,d-b\,e\right)-b\,e^2\,x-c\,e^2\,x^2}+$$
$$\frac{1}{192\,c^3\,e}\left(2\,c\,d-b\,e\right)\left(12\,c\,e\,f+2\,c\,d\,g-7\,b\,e\,g\right)\left(b+2\,c\,x\right)\left(d\left(c\,d-b\,e\right)-b\,e^2\,x-c\,e^2\,x^2\right)^{3/2}+$$
$$\frac{\left(7\,b\,e\,g-12\,c\left(e\,f+d\,g\right)-10\,c\,e\,g\,x\right)\left(d\left(c\,d-b\,e\right)-b\,e^2\,x-c\,e^2\,x^2\right)^{5/2}}{60\,c^2\,e^2}+\frac{1}{1024\,c^{9/2}\,e^2}$$
$$\left(2\,c\,d-b\,e\right)^5\left(12\,c\,e\,f+2\,c\,d\,g-7\,b\,e\,g\right)\text{ArcTan}\left[\frac{e\left(b+2\,c\,x\right)}{2\,\sqrt{c}\,\sqrt{d\left(c\,d-b\,e\right)-b\,e^2\,x-c\,e^2\,x^2}}\right]$$

Result (type 3, 475 leaves):

$$\frac{1}{15\,360\,c^{9/2}\,e^2}\left(\left(d+e\,x\right)\left(-b\,e+c\left(d-e\,x\right)\right)\right)^{3/2}$$
$$\left(\frac{1}{\left(d+e\,x\right)\left(-c\,d+b\,e+c\,e\,x\right)}\sqrt{c}\,\left(-210\,b^5\,e^5\,g+20\,b^4\,c\,e^4\left(18\,e\,f+94\,d\,g+7\,e\,g\,x\right)-\right.\right.$$
$$16\,b^3\,c^2\,e^3\left(407\,d^2\,g+e^2\,x\left(15\,f+7\,g\,x\right)+3\,d\,e\left(65\,f+23\,g\,x\right)\right)+$$
$$96\,b^2\,c^3\,e^2\left(111\,d^3\,g+e^3\,x^2\left(2\,f+g\,x\right)+d\,e^2\,x\left(19\,f+8\,g\,x\right)+d^2\,e\left(107\,f+33\,g\,x\right)\right)+$$
$$64\,c^5\left(48\,d^5\,g+12\,d\,e^4\,x^3\left(5\,f+4\,g\,x\right)+8\,e^5\,x^4\left(6\,f+5\,g\,x\right)+3\,d^4\,e\left(16\,f+5\,g\,x\right)-6\,d^3\,e^2\,x\right.$$
$$\left.\left(25\,f+16\,g\,x\right)-2\,d^2\,e^3\,x^2\left(48\,f+35\,g\,x\right)\right)+32\,b\,c^4\,e\left(-273\,d^4\,g-6\,d^3\,e\left(57\,f+17\,g\,x\right)+\right.$$
$$\left.\left.4\,e^4\,x^3\left(33\,f+26\,g\,x\right)+6\,d^2\,e^2\,x\left(43\,f+29\,g\,x\right)+4\,d\,e^3\,x^2\left(93\,f+68\,g\,x\right)\right)\right)+$$
$$\left(15\,i\left(2\,c\,d-b\,e\right)^5\left(-7\,b\,e\,g+2\,c\left(6\,e\,f+d\,g\right)\right)\text{Log}\left[-\frac{i\,e\left(b+2\,c\,x\right)}{\sqrt{c}}+\right.\right.$$
$$\left.\left.\left.2\,\sqrt{d+e\,x}\,\sqrt{-b\,e+c\left(d-e\,x\right)}\,\right]\right)\Big/\left(\left(d+e\,x\right)^{3/2}\left(-b\,e+c\left(d-e\,x\right)\right)^{3/2}\right)\right)$$

Problem 2186: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(f+g\,x\right)\left(c\,d^2-b\,d\,e-b\,e^2\,x-c\,e^2\,x^2\right)^{3/2}}{d+e\,x}\,dx$$

Optimal (type 3, 266 leaves, 5 steps):

$$\frac{1}{64\,c^2\,e}\left(2\,c\,d-b\,e\right)\left(8\,c\,e\,f-2\,c\,d\,g-3\,b\,e\,g\right)\left(b+2\,c\,x\right)\sqrt{d\left(c\,d-b\,e\right)-b\,e^2\,x-c\,e^2\,x^2}+$$
$$\frac{\left(8\,c\,e\,f-2\,c\,d\,g-3\,b\,e\,g\right)\left(d\left(c\,d-b\,e\right)-b\,e^2\,x-c\,e^2\,x^2\right)^{3/2}}{24\,c\,e^2}-\frac{g\left(d\left(c\,d-b\,e\right)-b\,e^2\,x-c\,e^2\,x^2\right)^{5/2}}{4\,c\,e^2\left(d+e\,x\right)}+$$
$$\frac{1}{128\,c^{5/2}\,e^2}\left(2\,c\,d-b\,e\right)^3\left(8\,c\,e\,f-2\,c\,d\,g-3\,b\,e\,g\right)\text{ArcTan}\left[\frac{e\left(b+2\,c\,x\right)}{2\,\sqrt{c}\,\sqrt{d\left(c\,d-b\,e\right)-b\,e^2\,x-c\,e^2\,x^2}}\right]$$

Result (type 3, 296 leaves):

$$\frac{1}{384\, c^{5/2}\, e^2}\left((d+e x)\, (-b e+c (d-e x))\right)^{3/2} \left(-\left(\left(2 \sqrt{c}\, \left(-9 b^3 e^3 g+6 b^2 c e^2 (4 e f+6 d g+e g x)+8 c^3 \left(8 d^3 g-4 d e^2 x (3 f+2 g x)+2 e^3 x^2 (4 f+3 g x)-d^2 e (8 f+3 g x)\right)+4 b c^2 e \left(-19 d^2 g+2 d e (2 f+g x)+2 e^2 x (14 f+9 g x)\right)\right)\right)\Big/\left((d+e x)\, (-b e+c (d-e x))\right)\right)-\left(3\, i\, (2 c d-b e)^3\, (-8 c e f+2 c d g+3 b e g)\, \text{Log}\left[-\frac{i\, e\, (b+2 c x)}{\sqrt{c}}+2 \sqrt{d+e x}\, \sqrt{-b e+c (d-e x)}\right]\right)\Big/\left((d+e x)^{3/2}\, (-b e+c (d-e x))^{3/2}\right)\right)$$

Problem 2187: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(f+g x)\, \left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{3/2}}{(d+e x)^2}\, dx$$

Optimal (type 3, 278 leaves, 5 steps):

$$\frac{(6 c e f-4 c d g-b e g)\, (b+2 c x)\, \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}{8 c e}+\frac{(6 c e f-4 c d g-b e g)\, \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}}{3 e^2 (2 c d-b e)}+\frac{2 (e f-d g)\, \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{5/2}}{e^2 (2 c d-b e)\, (d+e x)^2}+\frac{1}{16 c^{3/2} e^2}(2 c d-b e)^2\, (6 c e f-4 c d g-b e g)\, \text{ArcTan}\left[\frac{e (b+2 c x)}{2 \sqrt{c}\, \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}\right]$$

Result (type 3, 231 leaves):

$$\frac{1}{48\, c^{3/2}\, e^2}\left((d+e x)\, (-b e+c (d-e x))\right)^{3/2} \left(-\left(\left(2 \sqrt{c}\, \left(3 b^2 e^2 g+2 b c e (15 e f-14 d g+7 e g x)+4 c^2 \left(10 d^2 g-6 d e (2 f+g x)+e^2 x (3 f+2 g x)\right)\right)\right)\Big/\left((d+e x)\, (-b e+c (d-e x))\right)\right)-\left(3\, i\, (-2 c d+b e)^2\, (-6 c e f+4 c d g+b e g)\, \text{Log}\left[-\frac{i\, e\, (b+2 c x)}{\sqrt{c}}+2 \sqrt{d+e x}\, \sqrt{-b e+c (d-e x)}\right]\right)\Big/\left((d+e x)^{3/2}\, (-b e+c (d-e x))^{3/2}\right)\right)$$

Problem 2188: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(f+g x)\left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{3/2}}{(d+e x)^3}\, dx$$

Optimal (type 3, 271 leaves, 5 steps):

$$-\frac{3 (4 c e f-6 c d g+b e g) \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}{4 e^2}-\frac{(4 c e f-6 c d g+b e g) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}}{2 e^2 (2 c d-b e) (d+e x)}-\frac{2 (e f-d g) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{5/2}}{e^2 (2 c d-b e) (d+e x)^3}-\frac{1}{8 \sqrt{c}\, e^2}3 (2 c d-b e) (4 c e f-6 c d g+b e g) \text{ArcTan}\left[\frac{e (b+2 c x)}{2 \sqrt{c} \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}\right]$$

Result (type 3, 214 leaves):

$$\frac{1}{8 e^2}\left((d+e x) (-b e+c (d-e x))\right)^{3/2} \left(-\left(\left(2 \left(8 (2 c d-b e) (e f-d g)+(5 b e g+4 c (e f-3 d g)) (d+e x)+2 c e g x (d+e x)\right)\right)\Big/\left((d+e x)^2 (-b e+c (d-e x))\right)\right)-\left(3 i (2 c d-b e) (4 c e f-6 c d g+b e g) \text{Log}\left[-\frac{i e (b+2 c x)}{\sqrt{c}}+2 \sqrt{d+e x} \sqrt{-b e+c (d-e x)}\right]\right)\Big/\left(\sqrt{c} (d+e x)^{3/2} (-b e+c (d-e x))^{3/2}\right)\right)$$

Problem 2189: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(f+g x)\left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{3/2}}{(d+e x)^4}\, dx$$

Optimal (type 3, 276 leaves, 5 steps):

$$\frac{c\,(2\,c\,e\,f-8\,c\,d\,g+3\,b\,e\,g)\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}{e^2\,(2\,c\,d-b\,e)}+\frac{2\,(2\,c\,e\,f-8\,c\,d\,g+3\,b\,e\,g)\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{3/2}}{3\,e^2\,(2\,c\,d-b\,e)\,(d+e\,x)^2}-\frac{2\,(e\,f-d\,g)\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{5/2}}{3\,e^2\,(2\,c\,d-b\,e)\,(d+e\,x)^4}+\frac{\sqrt{c}\,(2\,c\,e\,f-8\,c\,d\,g+3\,b\,e\,g)\,\text{ArcTan}\left[\frac{e\,(b+2\,c\,x)}{2\,\sqrt{c}\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}\right]}{2\,e^2}$$

Result (type 3, 207 leaves):

$$\left(i\,\left((d+e\,x)\,(-b\,e+c\,(d-e\,x))\right)^{3/2}\left(2\,i\,\sqrt{-b\,e+c\,(d-e\,x)}\right.\right.$$
$$\left(-2\,b\,e\,(2\,d\,g+e\,(f+3\,g\,x))+c\,\left(19\,d^2\,g+e^2\,x\,(-8\,f+3\,g\,x)+d\,e\,(-4\,f+26\,g\,x)\right)\right)+$$
$$3\,\sqrt{c}\,(2\,c\,e\,f-8\,c\,d\,g+3\,b\,e\,g)\,(d+e\,x)^{3/2}$$
$$\left.\left.\text{Log}\left[-\frac{i\,e\,(b+2\,c\,x)}{\sqrt{c}}+2\,\sqrt{d+e\,x}\,\sqrt{-b\,e+c\,(d-e\,x)}\right]\right)\right)\Big/$$
$$\left(6\,e^2\,(d+e\,x)^3\,(-b\,e+c\,(d-e\,x))^{3/2}\right)$$

Problem 2190: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(f+g\,x)\,\left(c\,d^2-b\,d\,e-b\,e^2\,x-c\,e^2\,x^2\right)^{3/2}}{(d+e\,x)^5}\,dx$$

Optimal (type 3, 214 leaves, 5 steps):

$$\frac{2\,c\,g\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}{e^2\,(d+e\,x)}-\frac{2\,g\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{3/2}}{3\,e^2\,(d+e\,x)^3}-\frac{2\,(e\,f-d\,g)\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{5/2}}{5\,e^2\,(2\,c\,d-b\,e)\,(d+e\,x)^5}+\frac{c^{3/2}\,g\,\text{ArcTan}\left[\frac{e\,(b+2\,c\,x)}{2\,\sqrt{c}\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}\right]}{e^2}$$

Result (type 3, 225 leaves):

$$\frac{1}{15 e^2}\left((d+e x)\,(-b e+c\,(d-e x))\right)^{3/2}$$
$$\left(-\left(\left(2\,\left(3\,(-2 c d+b e)^2\,(e f-d g)+(2 c d-b e)\,(-6 c e f+16 c d g-5 b e g)\,(d+e x)+c\right.\right.\right.\right.$$
$$\left.\left.\left.(3 c e f-43 c d g+20 b e g)\,(d+e x)^2\right)\right)\Big/\left((2 c d-b e)\,(d+e x)^4\,(-b e+c\,(d-e x))\right)\right)+$$
$$\left.\frac{15\,i\,c^{3/2}\,g\,\mathrm{Log}\left[-\frac{i e (b+2 c x)}{\sqrt{c}}+2\sqrt{d+e x}\,\sqrt{-b e+c\,(d-e x)}\,\right]}{(d+e x)^{3/2}\,(-b e+c\,(d-e x))^{3/2}}\right)$$

Problem 2195: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int (d+e x)^3\,(f+g x)\,\left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{5/2}\,dx$$

Optimal (type 3, 562 leaves, 9 steps):

$$\frac{1}{131072 c^7 e}11\,(2 c d-b e)^7\,(20 c e f+6 c d g-13 b e g)\,(b+2 c x)\,\sqrt{d\,(c d-b e)-b e^2 x-c e^2 x^2}+$$
$$\frac{1}{49152 c^6 e}11\,(2 c d-b e)^5\,(20 c e f+6 c d g-13 b e g)\,(b+2 c x)\,\left(d\,(c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}+$$
$$\frac{1}{15360 c^5 e}11\,(2 c d-b e)^3\,(20 c e f+6 c d g-13 b e g)\,(b+2 c x)\,\left(d\,(c d-b e)-b e^2 x-c e^2 x^2\right)^{5/2}-$$
$$\frac{1}{4480 c^4 e^2}11\,(2 c d-b e)^2\,(20 c e f+6 c d g-13 b e g)\,\left(d\,(c d-b e)-b e^2 x-c e^2 x^2\right)^{7/2}-$$
$$\frac{1}{2880 c^3 e^2}11\,(2 c d-b e)\,(20 c e f+6 c d g-13 b e g)\,(d+e x)\,\left(d\,(c d-b e)-b e^2 x-c e^2 x^2\right)^{7/2}-$$
$$\frac{1}{180 c^2 e^2}(20 c e f+6 c d g-13 b e g)\,(d+e x)^2\,\left(d\,(c d-b e)-b e^2 x-c e^2 x^2\right)^{7/2}-$$
$$\frac{g\,(d+e x)^3\,\left(d\,(c d-b e)-b e^2 x-c e^2 x^2\right)^{7/2}}{10 c e^2}+\frac{1}{262144 c^{15/2} e^2}$$
$$11\,(2 c d-b e)^9\,(20 c e f+6 c d g-13 b e g)\,\mathrm{ArcTan}\left[\frac{e\,(b+2 c x)}{2\sqrt{c}\,\sqrt{d\,(c d-b e)-b e^2 x-c e^2 x^2}}\right]$$

Result (type 3, 1491 leaves):

$$\frac{1}{(d+e\,x)^2\,(c\,d-b\,e-c\,e\,x)^2}$$

$$\Bigg(\frac{1}{41\,287\,680\,c^7\,e^2}\,\big(-19\,005\,440\,c^9\,d^8\,e\,f+87\,795\,200\,b\,c^8\,d^7\,e^2\,f-161\,137\,920\,b^2\,c^7\,d^6\,e^3\,f+$$
$$157\,489\,280\,b^3\,c^6\,d^5\,e^4\,f-93\,114\,560\,b^4\,c^5\,d^4\,e^5\,f+35\,402\,400\,b^5\,c^4\,d^3\,e^6\,f-$$
$$8\,445\,360\,b^6\,c^3\,d^2\,e^7\,f+1\,155\,000\,b^7\,c^2\,d\,e^8\,f-69\,300\,b^8\,c\,e^9\,f-9\,830\,400\,c^9\,d^9\,g+$$
$$51\,078\,400\,b\,c^8\,d^8\,e\,g-117\,794\,560\,b^2\,c^7\,d^7\,e^2\,g+156\,115\,200\,b^3\,c^6\,d^6\,e^3\,g-$$
$$130\,302\,400\,b^4\,c^5\,d^5\,e^4\,g+71\,145\,184\,b^5\,c^4\,d^4\,e^5\,g-25\,545\,168\,b^6\,c^3\,d^3\,e^6\,g+$$
$$5\,835\,984\,b^7\,c^2\,d^2\,e^7\,g-771\,540\,b^8\,c\,d\,e^8\,g+45\,045\,b^9\,e^9\,g\big)+$$
$$\frac{1}{20\,643\,840\,c^6\,e}\,\big(11\,773\,440\,c^8\,d^7\,e\,f-14\,992\,640\,b\,c^7\,d^6\,e^2\,f-10\,945\,920\,b^2\,c^6\,d^5\,e^3\,f+$$
$$21\,264\,960\,b^3\,c^5\,d^4\,e^4\,f-9\,217\,120\,b^4\,c^4\,d^3\,e^5\,f+2\,431\,440\,b^5\,c^3\,d^2\,e^6\,f-$$
$$360\,360\,b^6\,c^2\,d\,e^7\,f+23\,100\,b^7\,c\,e^8\,f-2\,661\,120\,c^8\,d^8\,g+12\,622\,080\,b\,c^7\,d^7\,e\,g-$$
$$24\,504\,320\,b^2\,c^6\,d^6\,e^2\,g+25\,880\,640\,b^3\,c^5\,d^5\,e^3\,g-16\,587\,360\,b^4\,c^4\,d^4\,e^4\,g+$$
$$6\,720\,560\,b^5\,c^3\,d^3\,e^5\,g-1\,688\,544\,b^6\,c^2\,d^2\,e^6\,g+241\,164\,b^7\,c\,d\,e^7\,g-15\,015\,b^8\,e^8\,g\big)\,x+$$
$$\frac{1}{5\,160\,960\,c^5}\,\big(6\,553\,600\,c^7\,d^6\,e\,f-16\,717\,440\,b\,c^6\,d^5\,e^2\,f+9\,107\,520\,b^2\,c^5\,d^4\,e^3\,f+$$
$$1\,415\,360\,b^3\,c^4\,d^3\,e^4\,f-417\,120\,b^4\,c^3\,d^2\,e^5\,f+67\,320\,b^5\,c^2\,d\,e^6\,f-4620\,b^6\,c\,e^7\,f+$$
$$1\,966\,080\,c^7\,d^7\,g-3\,081\,920\,b\,c^6\,d^6\,e\,g-336\,000\,b^2\,c^5\,d^5\,e^2\,g+2\,246\,160\,b^3\,c^4\,d^4\,e^3\,g-$$
$$1\,045\,120\,b^4\,c^3\,d^3\,e^4\,g+291\,324\,b^5\,c^2\,d^2\,e^5\,g-45\,144\,b^6\,c\,d\,e^6\,g+3003\,b^7\,e^7\,g\big)\,x^2+$$
$$\frac{1}{2\,580\,480\,c^4}e\,\big(981\,120\,c^6\,d^5\,e\,f-7\,859\,520\,b\,c^5\,d^4\,e^2\,f+7\,487\,040\,b^2\,c^4\,d^3\,e^3\,f+$$
$$151\,520\,b^3\,c^3\,d^2\,e^4\,f-26\,840\,b^4\,c^2\,d\,e^5\,f+1980\,b^5\,c\,e^6\,f+2\,358\,720\,c^6\,d^6\,g-$$
$$6\,092\,160\,b\,c^5\,d^5\,e\,g+3\,484\,080\,b^2\,c^4\,d^4\,e^2\,g+339\,840\,b^3\,c^3\,d^3\,e^3\,g-$$
$$106\,540\,b^4\,c^2\,d^2\,e^4\,g+18\,040\,b^5\,c\,d\,e^5\,g-1287\,b^6\,e^6\,g\big)\,x^3-\frac{1}{322\,560\,c^3}$$
$$e^2\,\big(337\,920\,c^5\,d^4\,e\,f+46\,560\,b\,c^4\,d^3\,e^2\,f-730\,320\,b^2\,c^3\,d^2\,e^3\,f-2760\,b^3\,c^2\,d\,e^4\,f+$$
$$220\,b^4\,c\,e^5\,f-92\,160\,c^5\,d^5\,g+762\,000\,b\,c^4\,d^4\,e\,g-733\,200\,b^2\,c^3\,d^3\,e^2\,g-$$
$$9960\,b^3\,c^2\,d^2\,e^3\,g+1860\,b^4\,c\,d\,e^4\,g-143\,b^5\,e^5\,g\big)\,x^4+\frac{1}{161\,280\,c^2}$$
$$e^3\,\big(-144\,480\,c^4\,d^3\,e\,f+278\,160\,b\,c^3\,d^2\,e^2\,f+147\,720\,b^2\,c^2\,d\,e^3\,f+100\,b^3\,c\,e^4\,f-$$
$$140\,112\,c^4\,d^4\,g-16\,176\,b\,c^3\,d^3\,e\,g+298\,968\,b^2\,c^2\,d^2\,e^2\,g+780\,b^3\,c\,d\,e^3\,g-65\,b^4\,e^4\,g\big)\,x^5+$$
$$\frac{1}{40\,320\,c}e^4\,\big(5120\,c^3\,d^2\,e\,f+47\,800\,b\,c^2\,d\,e^2\,f+6180\,b^2\,c\,e^3\,f-30\,720\,c^3\,d^3\,g+$$
$$59\,396\,b\,c^2\,d^2\,e\,g+31\,264\,b^2\,c\,d\,e^2\,g+15\,b^3\,e^3\,g\big)\,x^6+\frac{1}{2880}$$
$$e^5\,\big(1080\,c^2\,d\,e\,f+740\,b\,c\,e^2\,f+324\,c^2\,d^2\,g+2976\,b\,c\,d\,e\,g+383\,b^2\,e^2\,g\big)\,x^7+$$
$$\frac{1}{180}\,c\,e^6\,\big(20\,c\,e\,f+60\,c\,d\,g+41\,b\,e\,g\big)\,x^8+\frac{1}{10}\,c^2\,e^7\,g\,x^9\Bigg)$$
$$\big((d+e\,x)\,(-b\,e+c\,(d-e\,x))\big)^{5/2}-$$
$$\Bigg(11\,\mathrm{i}\,(-2\,c\,d+b\,e)^9\,(20\,c\,e\,f+6\,c\,d\,g-13\,b\,e\,g)$$
$$\big((d+e\,x)\,(-b\,e+c\,(d-e\,x))\big)^{5/2}$$
$$\mathrm{Log}\Big[-\frac{\mathrm{i}\,e\,(b+2\,c\,x)}{\sqrt{c}}+2\,\sqrt{d+e\,x}\,\sqrt{c\,d-b\,e-c\,e\,x}\Big]\Bigg)\Big/$$
$$\Big(262\,144\,c^{15/2}\,e^2\,(d+e\,x)^{5/2}\,(c\,d-b\,e-c\,e\,x)^{5/2}\Big)$$

Problem 2196: Result unnecessarily involves imaginary or complex numbers.

$$\int (d+e x)^2 (f+g x) \left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{5/2} \, dx$$

Optimal (type 3, 487 leaves, 9 steps):

$$\frac{1}{32768 c^6 e}5 (2 c d-b e)^6 (18 c e f+4 c d g-11 b e g) (b+2 c x) \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}+\frac{1}{12288 c^5 e}5 (2 c d-b e)^4 (18 c e f+4 c d g-11 b e g) (b+2 c x) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}+\frac{1}{768 c^4 e}(2 c d-b e)^2 (18 c e f+4 c d g-11 b e g) (b+2 c x) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{5/2}-\frac{1}{224 c^3 e^2}(2 c d-b e) (18 c e f+4 c d g-11 b e g) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{7/2}-\frac{(18 c e f+4 c d g-11 b e g) (d+e x) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{7/2}}{144 c^2 e^2}-\frac{g (d+e x)^2 \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{7/2}}{9 c e^2}+\frac{1}{65536 c^{13/2} e^2}5 (2 c d-b e)^8 (18 c e f+4 c d g-11 b e g) \text{ArcTan}\left[\frac{e (b+2 c x)}{2 \sqrt{c} \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}\right]$$

Result (type 3, 895 leaves):

$$\frac{1}{65536}\left((d+e x)(-b e+c(d-e x))\right)^{5/2}$$
$$\left(\frac{1}{63 c^6 e^2 (d+e x)^2(-c d+b e+c e x)^2}2\left(-3465 b^8 e^8 g+210 b^7 c e^7(27 e f+248 d g+11 e g x)-\right.\right.$$
$$84 b^6 c^2 e^6\left(4037 d^2 g+e^2 x(45 f+22 g x)+6 d e(165 f+64 g x)\right)+72 b^5 c^3 e^5$$
$$\left(17298 d^3 g+2 e^3 x^2(21 f+11 g x)+2 d e^2 x(357 f+166 g x)+d^2 e(7287 f+2663 g x)\right)-$$
$$256 c^8\left(1408 d^8 g-288 d e^7 x^6(8 f+7 g x)-112 e^8 x^7(9 f+8 g x)+\right.$$
$$18 d^7 e(128 f+35 g x)+48 d^3 e^5 x^4(144 f+119 g x)+8 d^2 e^6 x^5(189 f+160 g x)+$$
$$\left.6 d^4 e^4 x^3(315 f+256 g x)-12 d^5 e^3 x^2(576 f+413 g x)-d^6 e^2 x(5229 f+3328 g x)\right)+$$
$$192 b^2 c^6 e^2\left(-17681 d^6 g-38 d^5 e(639 f+182 g x)+8 e^6 x^5(243 f+206 g x)+\right.$$
$$16 d e^5 x^4(603 f+494 g x)+8 d^3 e^3 x^2(2097 f+1546 g x)+d^4 e^2 x(1215 f+2198 g x)+$$
$$\left.4 d^2 e^4 x^3(4707 f+3674 g x)\right)+128 b c^7 e\left(12938 d^7 g-78 d^5 e^2 x(225 f+154 g x)+\right.$$
$$16 e^7 x^6(297 f+259 g x)+24 d^2 e^5 x^4(549 f+457 g x)-24 d^3 e^4 x^3(837 f+646 g x)+$$
$$\left.16 d e^6 x^5(1053 f+898 g x)-18 d^4 e^3 x^2(2235 f+1613 g x)+d^6 e(21357 f+5837 g x)\right)+$$
$$32 b^3 c^5 e^3\left(123452 d^5 g+8 e^5 x^4(9 f+5 g x)+24 d e^4 x^3(39 f+20 g x)+\right.$$
$$\left.4 d^2 e^3 x^2(1539 f+713 g x)+4 d^3 e^2 x(7173 f+2884 g x)+3 d^4 e(40875 f+12587 g x)\right)-$$
$$16 b^4 c^4 e^4\left(175531 d^4 g+2 e^4 x^3(81 f+44 g x)+4 d e^3 x^2(594 f+295 g x)+\right.$$
$$\left.\left.3 d^2 e^2 x(6147 f+2684 g x)+2 d^3 e(57726 f+19583 g x)\right)\right)+$$
$$\left(5 i(-2 c d+b e)^8(18 c e f+4 c d g-11 b e g)\operatorname{Log}\left[-\frac{i e(b+2 c x)}{\sqrt{c}}+\right.\right.$$
$$\left.\left.\left.2\sqrt{d+e x}\sqrt{-b e+c(d-e x)}\right]\right)\Big/\left(c^{13/2} e^2(d+e x)^{5/2}(-b e+c(d-e x))^{5/2}\right)\right)$$

Problem 2197: Result unnecessarily involves imaginary or complex numbers.

$$\int(d+e x)(f+g x)\left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{5/2}dx$$

Optimal (type 3, 371 leaves, 6 steps):

$$\frac{1}{16384 c^5 e}5(2 c d-b e)^5(16 c e f+2 c d g-9 b e g)(b+2 c x)\sqrt{d(c d-b e)-b e^2 x-c e^2 x^2}+$$
$$\frac{1}{6144 c^4 e}5(2 c d-b e)^3(16 c e f+2 c d g-9 b e g)(b+2 c x)\left(d(c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}+$$
$$\frac{1}{384 c^3 e}(2 c d-b e)(16 c e f+2 c d g-9 b e g)(b+2 c x)\left(d(c d-b e)-b e^2 x-c e^2 x^2\right)^{5/2}+$$
$$\frac{(9 b e g-16 c(e f+d g)-14 c e g x)\left(d(c d-b e)-b e^2 x-c e^2 x^2\right)^{7/2}}{112 c^2 e^2}+\frac{1}{32768 c^{11/2} e^2}$$
$$5(2 c d-b e)^7(16 c e f+2 c d g-9 b e g)\operatorname{ArcTan}\left[\frac{e(b+2 c x)}{2\sqrt{c}\sqrt{d(c d-b e)-b e^2 x-c e^2 x^2}}\right]$$

Result (type 3, 741 leaves):

$$\frac{1}{32768}\left((d+e x)\left(-b e+c (d-e x)\right)\right)^{5/2}$$
$$\left(\frac{1}{21 c^5 e^2 (d+e x)^2 (-c d+b e+c e x)^2} 2 \left(945 b^7 e^7 g-210 b^6 c e^6 (8 e f+58 d g+3 e g x)+\right.\right.$$
$$28 b^5 c^2 e^5 \left(2363 d^2 g+38 d e (20 f+7 g x)+2 e^2 x (20 f+9 g x)\right)-$$
$$128 c^7 \left(384 d^7 g-64 d e^6 x^5 (7 f+6 g x)-48 e^7 x^6 (8 f+7 g x)+\right.$$
$$3 d^6 e (128 f+35 g x)-24 d^5 e^2 x (77 f+48 g x)+16 d^3 e^4 x^3 (91 f+72 g x)+$$
$$\left.8 d^2 e^5 x^4 (144 f+119 g x)-2 d^4 e^3 x^2 (576 f+413 g x)\right)+64 b c^6 e$$
$$\left(2967 d^6 g-8 d^2 e^4 x^3 (30 f+19 g x)+16 e^6 x^5 (116 f+99 g x)+6 d^5 e (692 f+181 g x)+\right.$$
$$\left.16 d e^5 x^4 (284 f+235 g x)-24 d^3 e^3 x^2 (374 f+269 g x)-6 d^4 e^2 x (1156 f+739 g x)\right)+$$
$$16 b^3 c^4 e^3 \left(20779 d^4 g+24 e^4 x^3 (2 f+g x)+8 d e^3 x^2 (74 f+33 g x)+\right.$$
$$\left.20 d^2 e^2 x (192 f+73 g x)+4 d^3 e (5024 f+1431 g x)\right)+$$
$$32 b^2 c^5 e^2 \left(-10434 d^5 g+1224 d^3 e^2 x (4 f+3 g x)+8 e^5 x^4 (296 f+243 g x)+16 d e^4 x^3\right.$$
$$\left.(583 f+455 g x)-3 d^4 e (4616 f+1227 g x)+4 d^2 e^3 x^2 (3276 f+2375 g x)\right)-8 b^4 c^3 e^4$$
$$\left.\left(24372 d^3 g+2 e^3 x^2 (56 f+27 g x)+8 d e^2 x (203 f+85 g x)+d^2 e (14112 f+4523 g x)\right)\right)+$$
$$\left(5 i (2 c d-b e)^7 (-9 b e g+2 c (8 e f+d g)) \operatorname{Log}\left[-\frac{i e (b+2 c x)}{\sqrt{c}}+\right.\right.$$
$$\left.\left.\left.2 \sqrt{d+e x} \sqrt{-b e+c (d-e x)}\right]\right) \Big/ \left(c^{11/2} e^2 (d+e x)^{5/2} (-b e+c (d-e x))^{5/2}\right)\right)$$

Problem 2198: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(f+g x) \left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{5/2}}{d+e x} \, dx$$

Optimal (type 3, 346 leaves, 6 steps):

$$-\frac{1}{512 c^3 e}(2 c d-b e)^3 (5 b e g-2 c (6 e f-d g)) (b+2 c x) \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}-$$
$$\frac{1}{192 c^2 e}(2 c d-b e) (5 b e g-2 c (6 e f-d g)) (b+2 c x) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}+$$
$$\frac{(12 c e f-2 c d g-5 b e g) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{5/2}}{60 c e^2}-\frac{g \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{7/2}}{6 c e^2 (d+e x)}-$$
$$\frac{1}{1024 c^{7/2} e^2}(2 c d-b e)^5 (5 b e g-2 c (6 e f-d g)) \operatorname{ArcTan}\left[\frac{e (b+2 c x)}{2 \sqrt{c} \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}\right]$$

Result (type 3, 476 leaves):

$$\frac{1}{15360\, c^{7/2}\, e^2} \left((d+e x) \left(-b e+c (d-e x)\right)\right)^{5/2} \left(\frac{1}{(d+e x)^2 \left(-c d+b e+c e x\right)^2} \sqrt{c} \left(150 b^5 e^5 g-20 b^4 c e^4 (18 e f+62 d g+5 e g x)+80 b^3 c^2 e^3 \left(47 d^2 g+e^2 x (3 f+g x)+d e (39 f+9 g x)\right)-64 c^5 \left(48 d^5 g+12 d e^4 x^3 (5 f+4 g x)-8 e^5 x^4 (6 f+5 g x)-3 d^4 e (16 f+5 g x)-6 d^3 e^2 x (25 f+16 g x)+2 d^2 e^3 x^2 (48 f+35 g x)\right)+32 b c^4 e \left(207 d^4 g+4 d e^3 x^2 (3 f+2 g x)-6 d^3 e (7 f+3 g x)+4 e^4 x^3 (63 f+50 g x)-6 d^2 e^2 x (107 f+67 g x)\right)-96 b^2 c^3 e^2 \left(67 d^3 g+d^2 e (43 f+9 g x)-e^3 x^2 (62 f+45 g x)-d e^2 x (109 f+68 g x)\right)\right)-\left(15 i (2 c d-b e)^5 \left(5 b e g+2 c (-6 e f+d g)\right) \text{Log}\left[-\frac{i e (b+2 c x)}{\sqrt{c}}+2 \sqrt{d+e x} \sqrt{-b e+c (d-e x)}\right]\right)\Big/\left((d+e x)^{5/2} \left(-b e+c (d-e x)\right)^{5/2}\right)\right)$$

Problem 2199: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(f+g x) \left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{5/2}}{(d+e x)^2}\, dx$$

Optimal (type 3, 354 leaves, 6 steps):

$$\frac{1}{128 c^2 e} (2 c d-b e)^2 (10 c e f-4 c d g-3 b e g) (b+2 c x) \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}+\frac{1}{48 c e} (10 c e f-4 c d g-3 b e g) (b+2 c x) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}+\frac{(10 c e f-4 c d g-3 b e g) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{5/2}}{15 e^2 (2 c d-b e)}+\frac{2 (e f-d g) \left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{7/2}}{3 e^2 (2 c d-b e) (d+e x)^2}+\frac{1}{256 c^{5/2} e^2} (2 c d-b e)^4 (10 c e f-4 c d g-3 b e g) \text{ArcTan}\left[\frac{e (b+2 c x)}{2 \sqrt{c} \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}\right]$$

Result (type 3, 381 leaves):

$$\frac{1}{3840\, c^{5/2}\, e^2}\left(-c\, d+b\, e+c\, e\, x\right)^2\sqrt{\left(d+e\, x\right)\left(-b\, e+c\left(d-e\, x\right)\right)}$$
$$\left(\frac{1}{\left(-c\, d+b\, e+c\, e\, x\right)^2}\sqrt{c}\left(-90\, b^4 e^4 g+60\, b^3 c\, e^3\left(5\, e\, f+8\, d\, g+e\, g\, x\right)-32\, c^4\left(56\, d^4 g+20\, d\, e^3 x^2\left(4\, f+3\, g\, x\right)-10\, d^3 e\left(8\, f+3\, g\, x\right)-6\, e^4 x^3\left(5\, f+4\, g\, x\right)-d^2 e^2 x\left(45\, f+32\, g\, x\right)\right)+16\, b\, c^3 e\left(174\, d^3 g+2\, e^3 x^2\left(85\, f+63\, g\, x\right)-d^2 e\left(195\, f+71\, g\, x\right)-2\, d\, e^2 x\left(125\, f+82\, g\, x\right)\right)+8\, b^2 c^2 e^2\left(-199\, d^2 g+d\, e\left(70\, f+32\, g\, x\right)+e^2 x\left(295\, f+186\, g\, x\right)\right)\right)+\left(15\, i\left(-2\, c\, d+b\, e\right)^4\left(10\, c\, e\, f-4\, c\, d\, g-3\, b\, e\, g\right)\mathrm{Log}\left[-\frac{i\, e\left(b+2\, c\, x\right)}{\sqrt{c}}+2\sqrt{d+e\, x}\sqrt{-b\, e+c\left(d-e\, x\right)}\right]\right)\Big/\left(\sqrt{d+e\, x}\left(-b\, e+c\left(d-e\, x\right)\right)^{5/2}\right)\right)$$

Problem 2200: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(f+g\, x\right)\left(c\, d^2-b\, d\, e-b\, e^2 x-c\, e^2 x^2\right)^{5/2}}{\left(d+e\, x\right)^3}\, dx$$

Optimal (type 3, 354 leaves, 7 steps):

$$\frac{1}{64\, c\, e}5\left(2\, c\, d-b\, e\right)\left(8\, c\, e\, f-6\, c\, d\, g-b\, e\, g\right)\left(b+2\, c\, x\right)\sqrt{d\left(c\, d-b\, e\right)-b\, e^2 x-c\, e^2 x^2}+\frac{5\left(8\, c\, e\, f-6\, c\, d\, g-b\, e\, g\right)\left(d\left(c\, d-b\, e\right)-b\, e^2 x-c\, e^2 x^2\right)^{3/2}}{24\, e^2}+\frac{1}{4\, e^2\left(2\, c\, d-b\, e\right)}\left(8\, c\, e\, f-6\, c\, d\, g-b\, e\, g\right)\left(c\, d-b\, e-c\, e\, x\right)\left(d\left(c\, d-b\, e\right)-b\, e^2 x-c\, e^2 x^2\right)^{3/2}+\frac{2\left(e\, f-d\, g\right)\left(d\left(c\, d-b\, e\right)-b\, e^2 x-c\, e^2 x^2\right)^{7/2}}{e^2\left(2\, c\, d-b\, e\right)\left(d+e\, x\right)^3}+\frac{1}{128\, c^{3/2}\, e^2}5\left(2\, c\, d-b\, e\right)^3\left(8\, c\, e\, f-6\, c\, d\, g-b\, e\, g\right)\mathrm{ArcTan}\left[\frac{e\left(b+2\, c\, x\right)}{2\sqrt{c}\sqrt{d\left(c\, d-b\, e\right)-b\, e^2 x-c\, e^2 x^2}}\right]$$

Result (type 3, 295 leaves):

$$\frac{1}{384\, c^{3/2}\, e^2}\left(\left(d+e\, x\right)\left(-b\, e+c\left(d-e\, x\right)\right)\right)^{5/2}\left(\left(\sqrt{c}\left(30\, b^3 e^3 g+4\, b^2 c\, e^2\left(132\, e\, f-118\, d\, g+59\, e\, g\, x\right)-16\, c^3\left(72\, d^3 g+12\, d\, e^2 x\left(3\, f+2\, g\, x\right)-2\, e^3 x^2\left(4\, f+3\, g\, x\right)-d^2 e\left(88\, f+45\, g\, x\right)\right)+8\, b\, c^2 e\left(173\, d^2 g+2\, e^2 x\left(26\, f+17\, g\, x\right)-2\, d\, e\left(106\, f+51\, g\, x\right)\right)\right)\right)\Big/\left(\left(d+e\, x\right)^2\left(-c\, d+b\, e+c\, e\, x\right)^2\right)-\left(15\, i\left(2\, c\, d-b\, e\right)^3\left(-8\, c\, e\, f+6\, c\, d\, g+b\, e\, g\right)\mathrm{Log}\left[-\frac{i\, e\left(b+2\, c\, x\right)}{\sqrt{c}}+2\sqrt{d+e\, x}\sqrt{-b\, e+c\left(d-e\, x\right)}\right]\right)\Big/\left(\left(d+e\, x\right)^{5/2}\left(-b\, e+c\left(d-e\, x\right)\right)^{5/2}\right)\right)$$

Problem 2201: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(f+g x)\left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{5/2}}{(d+e x)^4}\,dx$$

Optimal (type 3, 342 leaves, 6 steps):

$$-\frac{5 (6 c e f-8 c d g+b e g)(b+2 c x)\sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}{8 e}-\frac{5 c (6 c e f-8 c d g+b e g)\left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}}{3 e^2 (2 c d-b e)}-\frac{2 (6 c e f-8 c d g+b e g)\left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{5/2}}{e^2 (2 c d-b e)(d+e x)^2}-\frac{2 (e f-d g)\left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{7/2}}{e^2 (2 c d-b e)(d+e x)^4}-\frac{1}{16\sqrt{c}\, e^2}5 (2 c d-b e)^2 (6 c e f-8 c d g+b e g)\,\mathrm{ArcTan}\left[\frac{e (b+2 c x)}{2\sqrt{c}\sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}\right]$$

Result (type 3, 273 leaves):

$$\frac{1}{48 e^2}\left((d+e x)(-b e+c (d-e x))\right)^{5/2}\left(\left(6 b^2 e^2 (-16 e f+27 d g+11 e g x)+4 b c e \left(-176 d^2 g+d e (123 f-67 g x)+e^2 x (27 f+13 g x)\right)+8 c^2 \left(94 d^3 g+e^3 x^2 (3 f+2 g x)-d e^2 x (21 f+10 g x)+d^2 e (-72 f+34 g x)\right)\right)\Big/\left((d+e x)^3 (-c d+b e+c e x)^2\right)-\left(15\, i\, (-2 c d+b e)^2 (6 c e f-8 c d g+b e g)\,\mathrm{Log}\left[-\frac{i e (b+2 c x)}{\sqrt{c}}+2\sqrt{d+e x}\sqrt{-b e+c (d-e x)}\right]\right)\Big/\left(\sqrt{c}\,(d+e x)^{5/2}(-b e+c (d-e x))^{5/2}\right)\right)$$

Problem 2202: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(f+g x)\left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{5/2}}{(d+e x)^5}\,dx$$

Optimal (type 3, 350 leaves, 6 steps):

$$\frac{5\,c\,(4\,c\,e\,f-10\,c\,d\,g+3\,b\,e\,g)\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}{4\,e^2}+$$
$$\frac{5\,c\,(4\,c\,e\,f-10\,c\,d\,g+3\,b\,e\,g)\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{3/2}}{6\,e^2\,(2\,c\,d-b\,e)\,(d+e\,x)}+$$
$$\frac{2\,(4\,c\,e\,f-10\,c\,d\,g+3\,b\,e\,g)\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{5/2}}{3\,e^2\,(2\,c\,d-b\,e)\,(d+e\,x)^3}-$$
$$\frac{2\,(e\,f-d\,g)\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{7/2}}{3\,e^2\,(2\,c\,d-b\,e)\,(d+e\,x)^5}+\frac{1}{8\,e^2}$$
$$5\,\sqrt{c}\,(2\,c\,d-b\,e)\,(4\,c\,e\,f-10\,c\,d\,g+3\,b\,e\,g)\,\text{ArcTan}\left[\frac{e\,(b+2\,c\,x)}{2\,\sqrt{c}\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}\right]$$

Result (type 3, 260 leaves):

$$\frac{1}{24\,e^2\,(d+e\,x)^4\,\left(-b\,e+c\,(d-e\,x)\right)^{5/2}}\,\mathrm{i}\,\left((d+e\,x)\,(-b\,e+c\,(d-e\,x))\right)^{5/2}$$
$$\Big(2\,\mathrm{i}\,\sqrt{-b\,e+c\,(d-e\,x)}\,\Big(8\,(-2\,c\,d+b\,e)^2\,(e\,f-d\,g)+8\,(2\,c\,d-b\,e)\,(-7\,c\,e\,f+13\,c\,d\,g-3\,b\,e\,g)$$
$$(d+e\,x)-3\,c\,(9\,b\,e\,g+4\,c\,(e\,f-5\,d\,g))\,(d+e\,x)^2-6\,c^2\,e\,g\,x\,(d+e\,x)^2\Big)+$$
$$15\,\sqrt{c}\,(2\,c\,d-b\,e)\,(4\,c\,e\,f-10\,c\,d\,g+3\,b\,e\,g)\,(d+e\,x)^{3/2}$$
$$\text{Log}\left[-\frac{\mathrm{i}\,e\,(b+2\,c\,x)}{\sqrt{c}}+2\,\sqrt{d+e\,x}\,\sqrt{-b\,e+c\,(d-e\,x)}\right]\Big)$$

Problem 2203: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(f+g\,x)\,\left(c\,d^2-b\,d\,e-b\,e^2\,x-c\,e^2\,x^2\right)^{5/2}}{(d+e\,x)^6}\,dx$$

Optimal (type 3, 352 leaves, 6 steps):

$$-\frac{c^2\,(2\,c\,e\,f-12\,c\,d\,g+5\,b\,e\,g)\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}{e^2\,(2\,c\,d-b\,e)}-$$
$$\frac{2\,c\,(2\,c\,e\,f-12\,c\,d\,g+5\,b\,e\,g)\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{3/2}}{3\,e^2\,(2\,c\,d-b\,e)\,(d+e\,x)^2}+$$
$$\frac{2\,(2\,c\,e\,f-12\,c\,d\,g+5\,b\,e\,g)\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{5/2}}{15\,e^2\,(2\,c\,d-b\,e)\,(d+e\,x)^4}-$$
$$\frac{2\,(e\,f-d\,g)\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{7/2}}{5\,e^2\,(2\,c\,d-b\,e)\,(d+e\,x)^6}-$$
$$\frac{c^{3/2}\,(2\,c\,e\,f-12\,c\,d\,g+5\,b\,e\,g)\,\text{ArcTan}\left[\frac{e\,(b+2\,c\,x)}{2\,\sqrt{c}\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}\right]}{2\,e^2}$$

Result (type 3, 244 leaves):

$$-\frac{1}{30 e^2}\left((d+e x)\left(-b e+c (d-e x)\right)\right)^{5/2}\left(\left(2\left(6\left(-2 c d+b e\right)^2 (e f-d g)+2 (2 c d-b e)(-11 c e f+21 c d g-5 b e g)(d+e x)+2 c (23 c e f-93 c d g+35 b e g)(d+e x)^2-15 c^2 g (d+e x)^3\right)\right)\Big/\left((d+e x)^5\left(-c d+b e+c e x\right)^2\right)+\left(15 i c^{3/2}\left(5 b e g+2 c (e f-6 d g)\right)\mathrm{Log}\left[-\frac{i e (b+2 c x)}{\sqrt{c}}+2\sqrt{d+e x}\sqrt{-b e+c (d-e x)}\right]\right)\Big/\left((d+e x)^{5/2}\left(-b e+c (d-e x)\right)^{5/2}\right)\right)$$

Problem 2204: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(f+g x)\left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{5/2}}{(d+e x)^7}\,dx$$

Optimal (type 3, 264 leaves, 6 steps):

$$-\frac{2 c^2 g\sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}{e^2 (d+e x)}+\frac{2 c g\left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}}{3 e^2 (d+e x)^3}-\frac{2 g\left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{5/2}}{5 e^2 (d+e x)^5}-\frac{2 (e f-d g)\left(d (c d-b e)-b e^2 x-c e^2 x^2\right)^{7/2}}{7 e^2 (2 c d-b e)(d+e x)^7}-\frac{c^{5/2} g\,\mathrm{ArcTan}\left[\frac{e (b+2 c x)}{2\sqrt{c}\sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}\right]}{e^2}$$

Result (type 3, 266 leaves):

$$\left((d+e x)\left(-b e+c (d-e x)\right)\right)^{5/2}\left(-\left(\left(2\left(15 (2 c d-b e)^3 (e f-d g)+3\left(-2 c d+b e\right)^2(-15 c e f+29 c d g-7 b e g)(d+e x)+c (2 c d-b e)(45 c e f-199 c d g+77 b e g)(d+e x)^2-c^2 (15 c e f-337 c d g+161 b e g)(d+e x)^3\right)\right)\Big/\left(105 e^2 (2 c d-b e)(d+e x)^6\left(-c d+b e+c e x\right)^2\right)\right)-\frac{i c^{5/2} g\,\mathrm{Log}\left[-\frac{i e (b+2 c x)}{\sqrt{c}}+2\sqrt{d+e x}\sqrt{-b e+c (d-e x)}\right]}{e^2 (d+e x)^{5/2}\left(-b e+c (d-e x)\right)^{5/2}}\right)$$

Problem 2209: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(d+e x)^3 (f+g x)}{\sqrt{c d^2-b d e-b e^2 x-c e^2 x^2}}\,dx$$

Optimal (type 3, 340 leaves, 6 steps):

$$-\frac{1}{64 c^4 e^2}5 (2 c d-b e)^2 (8 c e f+6 c d g-7 b e g) \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}-\frac{1}{96 c^3 e^2}5 (2 c d-b e) (8 c e f+6 c d g-7 b e g) (d+e x) \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}-\frac{(8 c e f+6 c d g-7 b e g) (d+e x)^2 \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}{24 c^2 e^2}-\frac{g (d+e x)^3 \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}{4 c e^2}+\frac{1}{128 c^{9/2} e^2}5 (2 c d-b e)^3 (8 c e f+6 c d g-7 b e g) \operatorname{ArcTan}\left[\frac{e (b+2 c x)}{2 \sqrt{c} \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}\right]$$

Result (type 3, 293 leaves):

$$\frac{1}{384 c^{9/2} e^2 \sqrt{(d+e x) (-b e+c (d-e x))}}\Big(-2 \sqrt{c} (d+e x) (-b e+c (d-e x)) \big(-105 b^3 e^3 g+10 b^2 c e^2 (12 e f+58 d g+7 e g x)-4 b c^2 e (259 d^2 g+2 e^2 x (10 f+7 g x)+2 d e (70 f+39 g x))+8 c^3 (72 d^3 g+12 d e^2 x (3 f+2 g x)+2 e^3 x^2 (4 f+3 g x)+d^2 e (88 f+45 g x))\big)+15 i (2 c d-b e)^3 (8 c e f+6 c d g-7 b e g) \sqrt{d+e x} \sqrt{-b e+c (d-e x)} \operatorname{Log}\left[-\frac{i e (b+2 c x)}{\sqrt{c}}+2 \sqrt{d+e x} \sqrt{-b e+c (d-e x)}\right]\Big)$$

Problem 2210: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(d+e x)^2 (f+g x)}{\sqrt{c d^2-b d e-b e^2 x-c e^2 x^2}} \, dx$$

Optimal (type 3, 265 leaves, 6 steps):

$$-\frac{(2 c d-b e) (6 c e f+4 c d g-5 b e g) \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}{8 c^3 e^2}-\frac{(6 c e f+4 c d g-5 b e g) (d+e x) \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}{12 c^2 e^2}-\frac{g (d+e x)^2 \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}{3 c e^2}+\frac{1}{16 c^{7/2} e^2}(2 c d-b e)^2 (6 c e f+4 c d g-5 b e g) \operatorname{ArcTan}\left[\frac{e (b+2 c x)}{2 \sqrt{c} \sqrt{d (c d-b e)-b e^2 x-c e^2 x^2}}\right]$$

Result (type 3, 228 leaves):

$$\left(-2\sqrt{c}\,(d+e x)\,(-b e+c\,(d-e x))\right.$$
$$\left(15 b^2 e^2 g-2 b c e\,(9 e f+26 d g+5 e g x)+4 c^2\,(10 d^2 g+6 d e\,(2 f+g x)+e^2 x\,(3 f+2 g x))\right)+$$
$$3\,\mathrm{i}\,(-2 c d+b e)^2\,(6 c e f+4 c d g-5 b e g)\,\sqrt{d+e x}\,\sqrt{-b e+c\,(d-e x)}$$
$$\left.\mathrm{Log}\left[-\frac{\mathrm{i}\,e\,(b+2 c x)}{\sqrt{c}}+2\sqrt{d+e x}\,\sqrt{-b e+c\,(d-e x)}\right]\right)\Big/$$
$$\left(48 c^{7/2} e^2\sqrt{(d+e x)\,(-b e+c\,(d-e x))}\right)$$

Problem 2211: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(d+e x)\,(f+g x)}{\sqrt{c d^2-b d e-b e^2 x-c e^2 x^2}}\,dx$$

Optimal (type 3, 149 leaves, 3 steps):

$$\frac{(3 b e g-4 c\,(e f+d g)-2 c e g x)\,\sqrt{d\,(c d-b e)-b e^2 x-c e^2 x^2}}{4 c^2 e^2}+\frac{1}{8 c^{5/2} e^2}$$
$$(2 c d-b e)\,(4 c e f+2 c d g-3 b e g)\,\mathrm{ArcTan}\left[\frac{e\,(b+2 c x)}{2\sqrt{c}\,\sqrt{d\,(c d-b e)-b e^2 x-c e^2 x^2}}\right]$$

Result (type 3, 184 leaves):

$$\left(-2\sqrt{c}\,(d+e x)\,(-b e+c\,(d-e x))\,(-3 b e g+2 c\,(2 e f+2 d g+e g x))+\right.$$
$$\mathrm{i}\,(2 c d-b e)\,(4 c e f+2 c d g-3 b e g)\,\sqrt{d+e x}\,\sqrt{-b e+c\,(d-e x)}$$
$$\left.\mathrm{Log}\left[-\frac{\mathrm{i}\,e\,(b+2 c x)}{\sqrt{c}}+2\sqrt{d+e x}\,\sqrt{-b e+c\,(d-e x)}\right]\right)\Big/$$
$$\left(8 c^{5/2} e^2\sqrt{(d+e x)\,(-b e+c\,(d-e x))}\right)$$

Problem 2212: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{f+g x}{(d+e x)\,\sqrt{c d^2-b d e-b e^2 x-c e^2 x^2}}\,dx$$

Optimal (type 3, 121 leaves, 3 steps):

$$-\frac{2\,(e f-d g)\,\sqrt{d\,(c d-b e)-b e^2 x-c e^2 x^2}}{e^2\,(2 c d-b e)\,(d+e x)}+\frac{g\,\mathrm{ArcTan}\left[\frac{e\,(b+2 c x)}{2\sqrt{c}\,\sqrt{d\,(c d-b e)-b e^2 x-c e^2 x^2}}\right]}{\sqrt{c}\,e^2}$$

Result (type 3, 156 leaves):

$$\left(-2\sqrt{c}\,(e f-d g)\,(-c d+b e+c e x)-\mathrm{i}\,(2 c d-b e)\,g\,\sqrt{d+e x}\right.$$
$$\left.\sqrt{-b e+c\,(d-e x)}\,\mathrm{Log}\left[-\frac{\mathrm{i}\,e\,(b+2 c x)}{\sqrt{c}}+2\sqrt{d+e x}\,\sqrt{-b e+c\,(d-e x)}\right]\right)\Big/$$
$$\left(\sqrt{c}\,e^2\,(-2 c d+b e)\,\sqrt{(d+e x)\,(-b e+c\,(d-e x))}\right)$$

Problem 2217: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(d+e x)^3\,(f+g x)}{\left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{3/2}}\,dx$$

Optimal (type 3, 287 leaves, 5 steps):

$$\frac{2\,(c e f+c d g-b e g)\,(d+e x)^3}{c e^2\,(2 c d-b e)\,\sqrt{d\,(c d-b e)-b e^2 x-c e^2 x^2}}+$$
$$\frac{3\,(4 c e f+6 c d g-5 b e g)\,\sqrt{d\,(c d-b e)-b e^2 x-c e^2 x^2}}{4 c^3 e^2}+$$
$$\frac{(4 c e f+6 c d g-5 b e g)\,(d+e x)\,\sqrt{d\,(c d-b e)-b e^2 x-c e^2 x^2}}{2 c^2 e^2\,(2 c d-b e)}-\frac{1}{8 c^{7/2} e^2}$$
$$3\,(2 c d-b e)\,(4 c e f+6 c d g-5 b e g)\,\mathrm{ArcTan}\left[\frac{e\,(b+2 c x)}{2\sqrt{c}\,\sqrt{d\,(c d-b e)-b e^2 x-c e^2 x^2}}\right]$$

Result (type 3, 229 leaves):

$$\left(2\sqrt{c}\,(d+e x)^2\,(-b e+c\,(d-e x))\right.$$
$$\left(15 b^2 e^2 g+b c e\,(-12 e f-43 d g+5 e g x)+2 c^2\,\left(14 d^2 g+5 d e\,(2 f-g x)-e^2 x\,(2 f+g x)\right)\right)-$$
$$3\,\mathrm{i}\,(2 c d-b e)\,(4 c e f+6 c d g-5 b e g)\,(d+e x)^{3/2}\,(-b e+c\,(d-e x))^{3/2}$$
$$\left.\mathrm{Log}\left[-\frac{\mathrm{i}\,e\,(b+2 c x)}{\sqrt{c}}+2\sqrt{d+e x}\,\sqrt{-b e+c\,(d-e x)}\right]\right)\Big/$$
$$\left(8 c^{7/2} e^2\,\left((d+e x)\,(-b e+c\,(d-e x))\right)^{3/2}\right)$$

Problem 2218: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(d+e x)^2\,(f+g x)}{\left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{3/2}}\,dx$$

Optimal (type 3, 213 leaves, 4 steps):

$$\frac{2\left(c e f+c d g-b e g\right)\left(d+e x\right)^2}{c e^2\left(2 c d-b e\right)\sqrt{d\left(c d-b e\right)-b e^2 x-c e^2 x^2}}+\frac{\left(2 c e f+4 c d g-3 b e g\right)\sqrt{d\left(c d-b e\right)-b e^2 x-c e^2 x^2}}{c^2 e^2\left(2 c d-b e\right)}-\frac{\left(2 c e f+4 c d g-3 b e g\right)\text{ArcTan}\left[\frac{e\,(b+2 c x)}{2\sqrt{c}\sqrt{d\,(c d-b e)-b e^2 x-c e^2 x^2}}\right]}{2 c^{5/2} e^2}$$

Result (type 3, 162 leaves) :

$$\left(2\sqrt{c}\left(d+e x\right)\left(-3 b e g+c\left(2 e f+3 d g-e g x\right)\right)-i\left(2 c e f+4 c d g-3 b e g\right)\sqrt{d+e x}\sqrt{-b e+c\left(d-e x\right)}\,\text{Log}\left[-\frac{i e\left(b+2 c x\right)}{\sqrt{c}}+2\sqrt{d+e x}\sqrt{-b e+c\left(d-e x\right)}\right]\right)\Big/\left(2 c^{5/2} e^2\sqrt{\left(d+e x\right)\left(-b e+c\left(d-e x\right)\right)}\right)$$

Problem 2219: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(d+e x\right)\left(f+g x\right)}{\left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{3/2}}\,dx$$

Optimal (type 3, 129 leaves, 3 steps) :

$$\frac{2\left(c e f+c d g-b e g\right)\left(d+e x\right)}{c e^2\left(2 c d-b e\right)\sqrt{d\left(c d-b e\right)-b e^2 x-c e^2 x^2}}-\frac{g\,\text{ArcTan}\left[\frac{e\,(b+2 c x)}{2\sqrt{c}\sqrt{d\,(c d-b e)-b e^2 x-c e^2 x^2}}\right]}{c^{3/2} e^2}$$

Result (type 3, 155 leaves) :

$$\left(-2\sqrt{c}\left(c e f+c d g-b e g\right)\left(d+e x\right)+i\left(2 c d-b e\right) g\sqrt{d+e x}\sqrt{-b e+c\left(d-e x\right)}\,\text{Log}\left[-\frac{i e\left(b+2 c x\right)}{\sqrt{c}}+2\sqrt{d+e x}\sqrt{-b e+c\left(d-e x\right)}\right]\right)\Big/\left(c^{3/2} e^2\left(-2 c d+b e\right)\sqrt{\left(d+e x\right)\left(-b e+c\left(d-e x\right)\right)}\right)$$

Problem 2223: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(d+e x\right)^5\left(f+g x\right)}{\left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{5/2}}\,dx$$

Optimal (type 3, 364 leaves, 6 steps) :

$$\frac{2\,(c\,e\,f+c\,d\,g-b\,e\,g)\,(d+e\,x)^5}{3\,c\,e^2\,(2\,c\,d-b\,e)\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{3/2}}-\frac{2\,(4\,c\,e\,f+10\,c\,d\,g-7\,b\,e\,g)\,(d+e\,x)^3}{3\,c^2\,e^2\,(2\,c\,d-b\,e)\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}-\frac{5\,(4\,c\,e\,f+10\,c\,d\,g-7\,b\,e\,g)\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}{4\,c^4\,e^2}-\frac{5\,(4\,c\,e\,f+10\,c\,d\,g-7\,b\,e\,g)\,(d+e\,x)\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}{6\,c^3\,e^2\,(2\,c\,d-b\,e)}+\frac{1}{8\,c^{9/2}\,e^2}5\,(2\,c\,d-b\,e)\,(4\,c\,e\,f+10\,c\,d\,g-7\,b\,e\,g)\,\text{ArcTan}\left[\frac{e\,(b+2\,c\,x)}{2\,\sqrt{c}\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}\right]$$

Result (type 3, 291 leaves):

$$\left(\frac{1}{3\,c^4\,e^2}2\,(d+e\,x)^3\,(-c\,d+b\,e+c\,e\,x)\,\left(-105\,b^3\,e^3\,g+10\,b^2\,c\,e^2\,(6\,e\,f+43\,d\,g-14\,e\,g\,x)+2\,c^3\,\left(118\,d^3\,g+23\,d^2\,e\,(2\,f-7\,g\,x)+3\,e^3\,x^2\,(2\,f+g\,x)+4\,d\,e^2\,x\,(-17\,f+6\,g\,x)\right)+b\,c^2\,e\,\left(-561\,d^2\,g+e^2\,x\,(80\,f-21\,g\,x)+d\,e\,(-160\,f+438\,g\,x)\right)\right)-\frac{1}{c^{9/2}\,e^2}5\,\mathrm{i}\,(-2\,c\,d+b\,e)\,(4\,c\,e\,f+10\,c\,d\,g-7\,b\,e\,g)\,(d+e\,x)^{5/2}\,(-b\,e+c\,(d-e\,x))^{5/2}\,\text{Log}\left[-\frac{\mathrm{i}\,e\,(b+2\,c\,x)}{\sqrt{c}}+2\,\sqrt{d+e\,x}\,\sqrt{-b\,e+c\,(d-e\,x)}\right]\right)\Big/\left(8\,\left((d+e\,x)\,(-b\,e+c\,(d-e\,x))\right)^{5/2}\right)$$

Problem 2224: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(d+e\,x)^4\,(f+g\,x)}{\left(c\,d^2-b\,d\,e-b\,e^2\,x-c\,e^2\,x^2\right)^{5/2}}\,dx$$

Optimal (type 3, 291 leaves, 5 steps):

$$\frac{2\,(c\,e\,f+c\,d\,g-b\,e\,g)\,(d+e\,x)^4}{3\,c\,e^2\,(2\,c\,d-b\,e)\,\left(d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2\right)^{3/2}}-\frac{2\,(2\,c\,e\,f+8\,c\,d\,g-5\,b\,e\,g)\,(d+e\,x)^2}{3\,c^2\,e^2\,(2\,c\,d-b\,e)\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}-\frac{(2\,c\,e\,f+8\,c\,d\,g-5\,b\,e\,g)\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}{c^3\,e^2\,(2\,c\,d-b\,e)}+\frac{(2\,c\,e\,f+8\,c\,d\,g-5\,b\,e\,g)\,\text{ArcTan}\left[\frac{e\,(b+2\,c\,x)}{2\,\sqrt{c}\,\sqrt{d\,(c\,d-b\,e)-b\,e^2\,x-c\,e^2\,x^2}}\right]}{2\,c^{7/2}\,e^2}$$

Result (type 3, 219 leaves):

$$\left(2\sqrt{c}\,(d+e x)^3\,(-b e+c\,(d-e x))\,\left(-15 b^2 e^2 g+2 b c e\,(3 e f+17 d g-10 e g x)+c^2\,\left(-19 d^2 g+e^2 x\,(8 f-3 g x)+d e\,(-4 f+26 g x)\right)\right)+3\,i\,(2 c e f+8 c d g-5 b e g)\,(d+e x)^{5/2}\,(-b e+c\,(d-e x))^{5/2}\,\mathrm{Log}\left[-\frac{i\,e\,(b+2 c x)}{\sqrt{c}}+2\sqrt{d+e x}\,\sqrt{-b e+c\,(d-e x)}\right]\right)\Big/\left(6 c^{7/2} e^2\,\left((d+e x)\,(-b e+c\,(d-e x))\right)^{5/2}\right)$$

Problem 2225: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(d+e x)^3\,(f+g x)}{\left(c d^2-b d e-b e^2 x-c e^2 x^2\right)^{5/2}}\,dx$$

Optimal (type 3, 177 leaves, 4 steps):

$$\frac{2\,(c e f+c d g-b e g)\,(d+e x)^3}{3 c e^2\,(2 c d-b e)\,\left(d\,(c d-b e)-b e^2 x-c e^2 x^2\right)^{3/2}}-\frac{2 g\,(d+e x)}{c^2 e^2\sqrt{d\,(c d-b e)-b e^2 x-c e^2 x^2}}+\frac{g\,\mathrm{ArcTan}\left[\frac{e\,(b+2 c x)}{2\sqrt{c}\,\sqrt{d\,(c d-b e)-b e^2 x-c e^2 x^2}}\right]}{c^{5/2} e^2}$$

Result (type 3, 202 leaves):

$$\left(-\frac{1}{2 c d-b e}2\sqrt{c}\,(d+e x)^3\,(-b e+c\,(d-e x))\,\left(3 b^2 e^2 g+4 b c e g\,(-2 d+e x)+c^2\,\left(5 d^2 g-e^2 f x-d e\,(f+7 g x)\right)\right)+3\,i\,g\,(d+e x)^{5/2}\,(-b e+c\,(d-e x))^{5/2}\,\mathrm{Log}\left[-\frac{i\,e\,(b+2 c x)}{\sqrt{c}}+2\sqrt{d+e x}\,\sqrt{-b e+c\,(d-e x)}\right]\right)\Big/\left(3 c^{5/2} e^2\,\left((d+e x)\,(-b e+c\,(d-e x))\right)^{5/2}\right)$$

Problem 2292: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int(d+e x)^{-3-2 p}\,(f+g x)\,\left(d\,(e f+d g+d g p)+e\,(e f+3 d g+2 d g p)\,x+e^2 g\,(2+p)\,x^2\right)^p\,dx$$

Optimal (type 3, 64 leaves, 1 step):

$$-\frac{1}{e^2\,(2+p)}(d+e x)^{-3-2 p}\,\left(d\,(e f+d g\,(1+p))+e\,(e f+d g\,(3+2 p))\,x+e^2 g\,(2+p)\,x^2\right)^{1+p}$$

Result (type 5, 139 leaves):

$$-\left(\left(g\,(d+e\,x)^{-2\,(1+p)}\,\left((d+e\,x)\,(d\,g\,(1+p)+e\,(f+g\,(2+p)\,x))\right)^{1+p}\left(e\,f-d\,g+g\,(2+p)^2\,(d+e\,x)\,\left(\frac{g\,(2+p)\,(d+e\,x)}{-e\,f+d\,g}\right)^p \text{Hypergeometric2F1}\left[1+p,\,3+p,\,2+p,\,\frac{d\,g\,(1+p)+e\,(f+g\,(2+p)\,x)}{e\,f-d\,g}\right]\right)\right)\Big/\left(e^2\,(e\,f-d\,g)^2\,(1+p)\right)\right)$$

Problem 2301: Result unnecessarily involves imaginary or complex numbers.

$$\int (1+x)^{3/2}\,(a+b\,x)\,\left(1-x+x^2\right)^{3/2}\,dx$$

Optimal (type 4, 365 leaves, 6 steps):

$$\frac{54\,b\,\sqrt{1+x}\,\sqrt{1-x+x^2}}{91\,\left(1+\sqrt{3}+x\right)}+\frac{18\,\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(91\,a\,x+55\,b\,x^2\right)}{5005}+\frac{2}{143}\,\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(13\,a\,x+11\,b\,x^2\right)\,\left(1+x^3\right)-\left(27\times 3^{1/4}\,\sqrt{2-\sqrt{3}}\,b\,(1+x)^{3/2}\,\sqrt{1-x+x^2}\,\sqrt{\frac{1-x+x^2}{\left(1+\sqrt{3}+x\right)^2}}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+x}{1+\sqrt{3}+x}\right],\,-7-4\,\sqrt{3}\right]\right)\Big/\left(91\,\sqrt{\frac{1+x}{\left(1+\sqrt{3}+x\right)^2}}\,\left(1+x^3\right)\right)+\left(18\times 3^{3/4}\,\sqrt{2+\sqrt{3}}\,\left(91\,a-55\,\left(1-\sqrt{3}\right)\,b\right)\,(1+x)^{3/2}\,\sqrt{1-x+x^2}\,\sqrt{\frac{1-x+x^2}{\left(1+\sqrt{3}+x\right)^2}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+x}{1+\sqrt{3}+x}\right],\,-7-4\,\sqrt{3}\right]\right)\Big/\left(5005\,\sqrt{\frac{1+x}{\left(1+\sqrt{3}+x\right)^2}}\,\left(1+x^3\right)\right)$$

Result (type 4, 437 leaves):

$$\frac{2 x \sqrt{1+x} \sqrt{1-x+x^2} \left(91 a \left(14+5 x^3\right)+55 b x \left(16+7 x^3\right)\right)}{5005}-$$

$$\left(9 (1+x)^{3/2} \left(-\frac{660 \sqrt{-\frac{i}{3 i+\sqrt{3}}} b \left(1-x+x^2\right)}{(1+x)^2}+\frac{1}{\sqrt{1+x}} 165 i \sqrt{2} \left(i+\sqrt{3}\right) b \sqrt{\frac{3 i+\sqrt{3}-\frac{6 i}{1+x}}{3 i+\sqrt{3}}}\right.\right.$$

$$\sqrt{\frac{-3 i+\sqrt{3}+\frac{6 i}{1+x}}{-3 i+\sqrt{3}}} \text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{-\frac{6 i}{3 i+\sqrt{3}}}}{\sqrt{1+x}}\right], \frac{3 i+\sqrt{3}}{3 i-\sqrt{3}}\right]+\frac{1}{\sqrt{1+x}}$$

$$\sqrt{2} \left(-182 i \sqrt{3} a+55 \left(3-i \sqrt{3}\right) b\right) \sqrt{\frac{3 i+\sqrt{3}-\frac{6 i}{1+x}}{3 i+\sqrt{3}}} \sqrt{\frac{-3 i+\sqrt{3}+\frac{6 i}{1+x}}{-3 i+\sqrt{3}}}$$

$$\left.\left.\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{-\frac{6 i}{3 i+\sqrt{3}}}}{\sqrt{1+x}}\right], \frac{3 i+\sqrt{3}}{3 i-\sqrt{3}}\right]\right)\right) \Big/ \left(10010 \sqrt{-\frac{i}{3 i+\sqrt{3}}} \sqrt{1-x+x^2}\right)$$

Problem 2302: Result unnecessarily involves imaginary or complex numbers.

$$\int \sqrt{1+x} (a+b x) \sqrt{1-x+x^2} \, dx$$

Optimal (type 4, 326 leaves, 5 steps):

$$\frac{6 b \sqrt{1+x} \sqrt{1-x+x^2}}{7 \left(1+\sqrt{3}+x\right)}+\frac{2}{35} \sqrt{1+x} \sqrt{1-x+x^2} \left(7 a x+5 b x^2\right)-$$

$$\left(3 \times 3^{1/4} \sqrt{2-\sqrt{3}} b (1+x)^{3/2} \sqrt{1-x+x^2} \sqrt{\frac{1-x+x^2}{\left(1+\sqrt{3}+x\right)^2}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+x}{1+\sqrt{3}+x}\right], -7-4 \sqrt{3}\right]\right) \Big/ \left(7 \sqrt{\frac{1+x}{\left(1+\sqrt{3}+x\right)^2}} \left(1+x^3\right)\right)+$$

$$\left(2 \times 3^{3/4} \sqrt{2+\sqrt{3}} \left(7 a-5 \left(1-\sqrt{3}\right) b\right) (1+x)^{3/2} \sqrt{1-x+x^2} \sqrt{\frac{1-x+x^2}{\left(1+\sqrt{3}+x\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+x}{1+\sqrt{3}+x}\right], -7-4 \sqrt{3}\right]\right) \Big/ \left(35 \sqrt{\frac{1+x}{\left(1+\sqrt{3}+x\right)^2}} \left(1+x^3\right)\right)$$

Result (type 4, 423 leaves):

$$\frac{2}{35} x \sqrt{1+x} \left(7 a+5 b x\right) \sqrt{1-x+x^2} - \left((1+x)^{3/2} \left(-\frac{60 \sqrt{-\frac{i}{3 i+\sqrt{3}}}\, b \left(1-x+x^2\right)}{(1+x)^2} + \frac{1}{\sqrt{1+x}} 15 i \sqrt{2} \left(i+\sqrt{3}\right) b \sqrt{\frac{3 i+\sqrt{3}-\frac{6 i}{1+x}}{3 i+\sqrt{3}}} \sqrt{\frac{-3 i+\sqrt{3}+\frac{6 i}{1+x}}{-3 i+\sqrt{3}}}\, \text{EllipticE}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{-\frac{6 i}{3 i+\sqrt{3}}}}{\sqrt{1+x}}\right], \frac{3 i+\sqrt{3}}{3 i-\sqrt{3}}\right] + \frac{1}{\sqrt{1+x}} \sqrt{2} \left(-14 i \sqrt{3} a+5 \left(3-i \sqrt{3}\right) b\right) \sqrt{\frac{3 i+\sqrt{3}-\frac{6 i}{1+x}}{3 i+\sqrt{3}}} \sqrt{\frac{-3 i+\sqrt{3}+\frac{6 i}{1+x}}{-3 i+\sqrt{3}}}\, \text{EllipticF}\left[i\, \text{ArcSinh}\left[\frac{\sqrt{-\frac{6 i}{3 i+\sqrt{3}}}}{\sqrt{1+x}}\right], \frac{3 i+\sqrt{3}}{3 i-\sqrt{3}}\right]\right)\right) \Bigg/ \left(70 \sqrt{-\frac{i}{3 i+\sqrt{3}}} \sqrt{1-x+x^2}\right)$$

Problem 2303: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{a+b x}{\sqrt{1+x} \sqrt{1-x+x^2}} \, dx$$

Optimal (type 4, 275 leaves, 4 steps):

$$\frac{2 b \left(1+x^3\right)}{\sqrt{1+x} \left(1+\sqrt{3}+x\right) \sqrt{1-x+x^2}} - \left(3^{1/4} \sqrt{2-\sqrt{3}}\, b \sqrt{1+x} \sqrt{\frac{1-x+x^2}{\left(1+\sqrt{3}+x\right)^2}}\, \text{EllipticE}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+x}{1+\sqrt{3}+x}\right], -7-4 \sqrt{3}\right]\right) \Bigg/ \left(\sqrt{\frac{1+x}{\left(1+\sqrt{3}+x\right)^2}} \sqrt{1-x+x^2}\right) + \left(2 \sqrt{2+\sqrt{3}} \left(a-\left(1-\sqrt{3}\right) b\right) \sqrt{1+x} \sqrt{\frac{1-x+x^2}{\left(1+\sqrt{3}+x\right)^2}}\, \text{EllipticF}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+x}{1+\sqrt{3}+x}\right], -7-4 \sqrt{3}\right]\right) \Bigg/ \left(3^{1/4} \sqrt{\frac{1+x}{\left(1+\sqrt{3}+x\right)^2}} \sqrt{1-x+x^2}\right)$$

Result (type 4, 389 leaves):

$$-\left(\left((1+x)^{3/2}\left(-\frac{12\sqrt{-\frac{i}{3i+\sqrt{3}}}\,b\left(1-x+x^2\right)}{(1+x)^2}+\frac{1}{\sqrt{1+x}}3\,i\,\sqrt{2}\left(i+\sqrt{3}\right)b\sqrt{\frac{3i+\sqrt{3}-\frac{6i}{1+x}}{3i+\sqrt{3}}}\right.\right.\right.$$

$$\sqrt{\frac{-3i+\sqrt{3}+\frac{6i}{1+x}}{-3i+\sqrt{3}}}\;\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-\frac{6i}{3i+\sqrt{3}}}}{\sqrt{1+x}}\right],\frac{3i+\sqrt{3}}{3i-\sqrt{3}}\right]+$$

$$\frac{1}{\sqrt{1+x}}\sqrt{2}\left(-2\,i\,\sqrt{3}\,a+\left(3-i\sqrt{3}\right)b\right)\sqrt{\frac{3i+\sqrt{3}-\frac{6i}{1+x}}{3i+\sqrt{3}}}\sqrt{\frac{-3i+\sqrt{3}+\frac{6i}{1+x}}{-3i+\sqrt{3}}}$$

$$\left.\left.\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-\frac{6i}{3i+\sqrt{3}}}}{\sqrt{1+x}}\right],\frac{3i+\sqrt{3}}{3i-\sqrt{3}}\right]\right)\right)\Big/\left(6\sqrt{-\frac{i}{3i+\sqrt{3}}}\sqrt{1-x+x^2}\right)\right)$$

Problem 2304: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{a+b\,x}{(1+x)^{3/2}\left(1-x+x^2\right)^{3/2}}\,dx$$

Optimal (type 4, 304 leaves, 5 steps):

$$\frac{2x(a+bx)}{3\sqrt{1+x}\sqrt{1-x+x^2}}-\frac{2b\left(1+x^3\right)}{3\sqrt{1+x}\left(1+\sqrt{3}+x\right)\sqrt{1-x+x^2}}+$$

$$\left(\sqrt{2-\sqrt{3}}\,b\sqrt{1+x}\sqrt{\frac{1-x+x^2}{\left(1+\sqrt{3}+x\right)^2}}\;\text{EllipticE}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+x}{1+\sqrt{3}+x}\right],-7-4\sqrt{3}\right]\right)\Big/$$

$$\left(3^{3/4}\sqrt{\frac{1+x}{\left(1+\sqrt{3}+x\right)^2}}\sqrt{1-x+x^2}\right)+\left(2\sqrt{2+\sqrt{3}}\left(a+b-\sqrt{3}\,b\right)\sqrt{1+x}\sqrt{\frac{1-x+x^2}{\left(1+\sqrt{3}+x\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{1-\sqrt{3}+x}{1+\sqrt{3}+x}\right],-7-4\sqrt{3}\right]\right)\Big/\left(3\times3^{1/4}\sqrt{\frac{1+x}{\left(1+\sqrt{3}+x\right)^2}}\sqrt{1-x+x^2}\right)$$

Result (type 4, 417 leaves):

$$\left(12\sqrt{-\frac{i}{3\,i+\sqrt{3}}}\;x\,(a+b\,x)-12\sqrt{-\frac{i}{3\,i+\sqrt{3}}}\;b\,(1-x+x^2)+3\,i\,\sqrt{2}\,\left(i+\sqrt{3}\right)b\,(1+x)^{3/2}\right.$$

$$\sqrt{\frac{3\,i+\sqrt{3}-\frac{6\,i}{1+x}}{3\,i+\sqrt{3}}}\;\sqrt{-\frac{-3\,i+\sqrt{3}+\frac{6\,i}{1+x}}{3\,i-\sqrt{3}}}\;\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\frac{\sqrt{-\frac{6\,i}{3\,i+\sqrt{3}}}}{\sqrt{1+x}}\right],\frac{3\,i+\sqrt{3}}{3\,i-\sqrt{3}}\right]+$$

$$\sqrt{2}\,\left(2\,i\,\sqrt{3}\,a+\left(3-i\,\sqrt{3}\right)b\right)(1+x)^{3/2}\sqrt{\frac{3\,i+\sqrt{3}-\frac{6\,i}{1+x}}{3\,i+\sqrt{3}}}\;\sqrt{-\frac{-3\,i+\sqrt{3}+\frac{6\,i}{1+x}}{3\,i-\sqrt{3}}}$$

$$\left.\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\frac{\sqrt{-\frac{6\,i}{3\,i+\sqrt{3}}}}{\sqrt{1+x}}\right],\frac{3\,i+\sqrt{3}}{3\,i-\sqrt{3}}\right]\right)\Bigg/\left(18\sqrt{-\frac{i}{3\,i+\sqrt{3}}}\;\sqrt{1+x}\;\sqrt{1-x+x^2}\right)$$

Problem 2305: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{a+b\,x}{(1+x)^{5/2}\,(1-x+x^2)^{5/2}}\,dx$$

Optimal (type 4, 351 leaves, 6 steps):

$$\frac{2\,x\,(7\,a+5\,b\,x)}{27\,\sqrt{1+x}\,\sqrt{1-x+x^2}}+\frac{2\,x\,(a+b\,x)}{9\,\sqrt{1+x}\,\sqrt{1-x+x^2}\,(1+x^3)}-\frac{10\,b\,(1+x^3)}{27\,\sqrt{1+x}\,\left(1+\sqrt{3}+x\right)\sqrt{1-x+x^2}}+$$

$$\left(5\sqrt{2-\sqrt{3}}\;b\,\sqrt{1+x}\,\sqrt{\frac{1-x+x^2}{\left(1+\sqrt{3}+x\right)^2}}\;\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{1-\sqrt{3}+x}{1+\sqrt{3}+x}\right],-7-4\sqrt{3}\right]\right)\Bigg/$$

$$\left(9\times 3^{3/4}\sqrt{\frac{1+x}{\left(1+\sqrt{3}+x\right)^2}}\;\sqrt{1-x+x^2}\right)+$$

$$\left(2\sqrt{2+\sqrt{3}}\;\left(7\,a+5\left(1-\sqrt{3}\right)b\right)\sqrt{1+x}\,\sqrt{\frac{1-x+x^2}{\left(1+\sqrt{3}+x\right)^2}}\right.$$

$$\left.\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{1-\sqrt{3}+x}{1+\sqrt{3}+x}\right],-7-4\sqrt{3}\right]\right)\Bigg/\left(27\times 3^{1/4}\sqrt{\frac{1+x}{\left(1+\sqrt{3}+x\right)^2}}\;\sqrt{1-x+x^2}\right)$$

Result (type 4, 435 leaves):

$$\frac{2\,x\,\left(b\,x\,\left(8+5\,x^3\right)+a\,\left(10+7\,x^3\right)\right)}{27\,\left(1+x\right)^{3/2}\,\left(1-x+x^2\right)^{3/2}}+$$

$$\left(\left(1+x\right)^{3/2}\left(-\frac{60\,\sqrt{-\frac{i}{3\,i+\sqrt{3}}}\,b\,\left(1-x+x^2\right)}{\left(1+x\right)^2}+\frac{1}{\sqrt{1+x}}15\,i\,\sqrt{2}\,\left(i+\sqrt{3}\right)\,b\,\sqrt{\frac{3\,i+\sqrt{3}-\frac{6\,i}{1+x}}{3\,i+\sqrt{3}}}\right.\right.$$

$$\sqrt{\frac{-3\,i+\sqrt{3}+\frac{6\,i}{1+x}}{-3\,i+\sqrt{3}}}\;\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-\frac{6\,i}{3\,i+\sqrt{3}}}}{\sqrt{1+x}}\right],\,\frac{3\,i+\sqrt{3}}{3\,i-\sqrt{3}}\right]+$$

$$\frac{1}{\sqrt{1+x}}\sqrt{2}\,\left(14\,i\,\sqrt{3}\,a+5\,\left(3-i\,\sqrt{3}\right)\,b\right)\,\sqrt{\frac{3\,i+\sqrt{3}-\frac{6\,i}{1+x}}{3\,i+\sqrt{3}}}\,\sqrt{\frac{-3\,i+\sqrt{3}+\frac{6\,i}{1+x}}{-3\,i+\sqrt{3}}}$$

$$\left.\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{-\frac{6\,i}{3\,i+\sqrt{3}}}}{\sqrt{1+x}}\right],\,\frac{3\,i+\sqrt{3}}{3\,i-\sqrt{3}}\right]\right)\right)\Bigg/\left(162\,\sqrt{-\frac{i}{3\,i+\sqrt{3}}}\,\sqrt{1-x+x^2}\right)$$

Problem 2318: Result more than twice size of optimal antiderivative.

$$\int (A+B\,x)\,\left(d+e\,x\right)^5\,\left(a+b\,x+c\,x^2\right)^2\,dx$$

Optimal (type 1, 304 leaves, 2 steps):

$$-\frac{\left(B\,d-A\,e\right)\,\left(c\,d^2-b\,d\,e+a\,e^2\right)^2\,\left(d+e\,x\right)^6}{6\,e^6}-\frac{1}{7\,e^6}$$

$$\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\left(2\,A\,e\,\left(2\,c\,d-b\,e\right)-B\,\left(5\,c\,d^2-e\,\left(3\,b\,d-a\,e\right)\right)\right)\,\left(d+e\,x\right)^7-\frac{1}{8\,e^6}$$

$$\left(B\,\left(10\,c^2\,d^3+b\,e^2\,\left(3\,b\,d-2\,a\,e\right)-6\,c\,d\,e\,\left(2\,b\,d-a\,e\right)\right)-A\,e\,\left(6\,c^2\,d^2+b^2\,e^2-2\,c\,e\,\left(3\,b\,d-a\,e\right)\right)\right)$$

$$\left(d+e\,x\right)^8-\frac{1}{9\,e^6}\left(2\,A\,c\,e\,\left(2\,c\,d-b\,e\right)-B\,\left(10\,c^2\,d^2+b^2\,e^2-2\,c\,e\,\left(4\,b\,d-a\,e\right)\right)\right)\,\left(d+e\,x\right)^9-$$

$$\frac{c\,\left(5\,B\,c\,d-2\,b\,B\,e-A\,c\,e\right)\,\left(d+e\,x\right)^{10}}{10\,e^6}+\frac{B\,c^2\,\left(d+e\,x\right)^{11}}{11\,e^6}$$

Result (type 1, 665 leaves):

$$a^2 A d^5 x + \frac{1}{2} a d^4 (2 A b d + a B d + 5 a A e) x^2 + \frac{1}{3} d^3 \left(a B d (2 b d + 5 a e) + A \left(b^2 d^2 + 10 a b d e + 2 a \left(c d^2 + 5 a e^2\right)\right)\right) x^3 + \frac{1}{4} d^2 \left(b^2 d^2 (B d + 5 A e) + 2 b d \left(A c d^2 + 5 a B d e + 10 a A e^2\right) + 2 a \left(B c d^3 + 5 A c d^2 e + 5 a B d e^2 + 5 a A e^3\right)\right) x^4 + \frac{1}{5} d \left(5 b^2 d^2 e (B d + 2 A e) + 10 a B d e \left(c d^2 + a e^2\right) + 2 b d \left(B c d^3 + 5 A c d^2 e + 10 a B d e^2 + 10 a A e^3\right) + A \left(c^2 d^4 + 20 a c d^2 e^2 + 5 a^2 e^4\right)\right) x^5 + \frac{1}{6} \left(B \left(c^2 d^5 + 10 c d^3 e (b d + 2 a e) + 5 d e^2 \left(2 b^2 d^2 + 4 a b d e + a^2 e^2\right)\right) + A e \left(5 c^2 d^4 + 20 c d^2 e (b d + a e) + e^2 \left(10 b^2 d^2 + 10 a b d e + a^2 e^2\right)\right)\right) x^6 + \frac{1}{7} e \left(A e \left(10 c^2 d^3 + 10 c d e (2 b d + a e) + b e^2 (5 b d + 2 a e)\right) + B \left(5 c^2 d^4 + 20 c d^2 e (b d + a e) + e^2 \left(10 b^2 d^2 + 10 a b d e + a^2 e^2\right)\right)\right) x^7 + \frac{1}{8} e^2 \left(A e \left(10 c^2 d^2 + b^2 e^2 + 2 c e (5 b d + a e)\right) + B \left(10 c^2 d^3 + 10 c d e (2 b d + a e) + b e^2 (5 b d + 2 a e)\right)\right) x^8 + \frac{1}{9} e^3 \left(A c e (5 c d + 2 b e) + B \left(10 c^2 d^2 + b^2 e^2 + 2 c e (5 b d + a e)\right)\right) x^9 + \frac{1}{10} c e^4 (5 B c d + 2 b B e + A c e) x^{10} + \frac{1}{11} B c^2 e^5 x^{11}$$

Problem 2333: Result more than twice size of optimal antiderivative.

$$\int (A + B x) (d + e x)^5 \left(a + b x + c x^2\right)^3 \, dx$$

Optimal (type 1, 555 leaves, 2 steps):

$$-\frac{(B d - A e) \left(c d^2 - b d e + a e^2\right)^3 (d + e x)^6}{6 e^8} - \frac{1}{7 e^8} \left(c d^2 - b d e + a e^2\right)^2 \left(3 A e (2 c d - b e) - B \left(7 c d^2 - e (4 b d - a e)\right)\right) (d + e x)^7 - \frac{1}{8 e^8} 3 \left(c d^2 - b d e + a e^2\right) \left(B \left(7 c^2 d^3 - c d e (8 b d - 3 a e) + b e^2 (2 b d - a e)\right) - A e \left(5 c^2 d^2 + b^2 e^2 - c e (5 b d - a e)\right)\right) (d + e x)^8 - \frac{1}{9 e^8} \left(A e (2 c d - b e) \left(10 c^2 d^2 + b^2 e^2 - 2 c e (5 b d - 3 a e)\right) - B \left(35 c^3 d^4 - b^2 e^3 (4 b d - 3 a e) - 30 c^2 d^2 e (2 b d - a e) + 3 c e^2 \left(10 b^2 d^2 - 8 a b d e + a^2 e^2\right)\right)\right) (d + e x)^9 - \frac{1}{10 e^8} \left(B \left(35 c^3 d^3 - b^3 e^3 + 3 b c e^2 (5 b d - 2 a e) - 15 c^2 d e (3 b d - a e)\right) - 3 A c e \left(5 c^2 d^2 + b^2 e^2 - c e (5 b d - a e)\right)\right) (d + e x)^{10} - \frac{1}{11 e^8} 3 c \left(A c e (2 c d - b e) - B \left(7 c^2 d^2 + b^2 e^2 - c e (6 b d - a e)\right)\right) (d + e x)^{11} - \frac{c^2 (7 B c d - 3 b B e - A c e) (d + e x)^{12}}{12 e^8} + \frac{B c^3 (d + e x)^{13}}{13 e^8}$$

Result (type 1, 1178 leaves):

$$a^3 A d^5 x + \frac{1}{2} a^2 d^4 (3 A b d + a B d + 5 a A e) x^2 +$$
$$\frac{1}{3} a d^3 \left(a B d (3 b d + 5 a e) + A \left(3 b^2 d^2 + 15 a b d e + a \left(3 c d^2 + 10 a e^2\right)\right)\right) x^3 +$$
$$\frac{1}{4} d^2 \left(A \left(b^3 d^3 + 15 a b^2 d^2 e + 5 a^2 e \left(3 c d^2 + 2 a e^2\right) + 6 a b d \left(c d^2 + 5 a e^2\right)\right) + a B d \left(3 b^2 d^2 + 15 a b d e + a \left(3 c d^2 + 10 a e^2\right)\right)\right) x^4 + \frac{1}{5} d \left(b^3 d^3 (B d + 5 A e) + 3 b^2 d^2 \left(A c d^2 + 5 a B d e + 10 a A e^2\right) + 6 a b d \left(B c d^3 + 5 A c d^2 e + 5 a B d e^2 + 5 a A e^3\right) + a \left(5 a B d e \left(3 c d^2 + 2 a e^2\right) + A \left(3 c^2 d^4 + 30 a c d^2 e^2 + 5 a^2 e^4\right)\right)\right) x^5 +$$
$$\frac{1}{6} \left(5 b^3 d^3 e (B d + 2 A e) + 3 b^2 d^2 \left(B c d^3 + 5 A c d^2 e + 10 a B d e^2 + 10 a A e^3\right) + 3 b d \left(10 a B d e \left(c d^2 + a e^2\right) + A \left(c^2 d^4 + 20 a c d^2 e^2 + 5 a^2 e^4\right)\right) + a \left(A e \left(15 c^2 d^4 + 30 a c d^2 e^2 + a^2 e^4\right) + B \left(3 c^2 d^5 + 30 a c d^3 e^2 + 5 a^2 d e^4\right)\right)\right) x^6 +$$
$$\frac{1}{7} \left(10 b^3 d^2 e^2 (B d + A e) + 15 b^2 d e \left(B c d^3 + 2 A c d^2 e + 2 a B d e^2 + a A e^3\right) + a B e \left(15 c^2 d^4 + 30 a c d^2 e^2 + a^2 e^4\right) + A c d \left(c^2 d^4 + 30 a c d^2 e^2 + 15 a^2 e^4\right) + 3 b \left(A e \left(5 c^2 d^4 + 20 a c d^2 e^2 + a^2 e^4\right) + B \left(c^2 d^5 + 20 a c d^3 e^2 + 5 a^2 d e^4\right)\right)\right) x^7 +$$
$$\frac{1}{8} \left(A e \left(5 c^3 d^4 + 30 c^2 d^2 e (b d + a e) + b^2 e^3 (5 b d + 3 a e) + 3 c e^2 \left(10 b^2 d^2 + 10 a b d e + a^2 e^2\right)\right) + B \left(c^3 d^5 + 15 c^2 d^3 e (b d + 2 a e) + 15 c d e^2 \left(2 b^2 d^2 + 4 a b d e + a^2 e^2\right) + b e^3 \left(10 b^2 d^2 + 15 a b d e + 3 a^2 e^2\right)\right)\right) x^8 +$$
$$\frac{1}{9} e \left(A e \left(10 c^3 d^3 + b^3 e^3 + 15 c^2 d e (2 b d + a e) + 3 b c e^2 (5 b d + 2 a e)\right) + B \left(5 c^3 d^4 + 30 c^2 d^2 e (b d + a e) + b^2 e^3 (5 b d + 3 a e) + 3 c e^2 \left(10 b^2 d^2 + 10 a b d e + a^2 e^2\right)\right)\right) x^9 +$$
$$\frac{1}{10} e^2 \left(A c e \left(10 c^2 d^2 + 3 b^2 e^2 + 3 c e (5 b d + a e)\right) + B \left(10 c^3 d^3 + b^3 e^3 + 15 c^2 d e (2 b d + a e) + 3 b c e^2 (5 b d + 2 a e)\right)\right) x^{10} +$$
$$\frac{1}{11} c e^3 \left(A c e (5 c d + 3 b e) + B \left(10 c^2 d^2 + 3 b^2 e^2 + 3 c e (5 b d + a e)\right)\right) x^{11} +$$
$$\frac{1}{12} c^2 e^4 (5 B c d + 3 b B e + A c e) x^{12} +$$
$$\frac{1}{13} B c^3 e^5 x^{13}$$

Problem 2372: Result more than twice size of optimal antiderivative.

$$\int \frac{(d + e x)^3 (f + g x)}{\left(a + b x + c x^2\right)^3} \, dx$$

Optimal (type 3, 195 leaves, 4 steps):

$$-\frac{(d+e x)^3 \left(b f-2 a g+(2 c f-b g) x\right)}{2 \left(b^2-4 a c\right) \left(a+b x+c x^2\right)^2}+\frac{3 (2 c d f-b e f-b d g+2 a e g) (d+e x) \left(b d-2 a e+(2 c d-b e) x\right)}{2 \left(b^2-4 a c\right)^2 \left(a+b x+c x^2\right)}-\frac{6 \left(c d^2-b d e+a e^2\right) (2 c d f-b e f-b d g+2 a e g) \text{ArcTanh}\left[\frac{b+2 c x}{\sqrt{b^2-4 a c}}\right]}{\left(b^2-4 a c\right)^{5/2}}$$

Result (type 3, 550 leaves) :

$$\frac{1}{2} \left(\frac{1}{c^3 \left(b^2-4 a c\right)^2 (a+x (b+c x))} \left(b^5 e^3 g+b^3 c e \left(-8 a e^2 g+3 c d (e f+d g)\right)-b^4 c e^2 (3 d g+e (f+2 g x))-4 c^3 \left(-3 c^2 d^3 f x-3 a c d e (e f+d g) x+a^2 e^2 (4 e f+12 d g+5 e g x)\right)+b^2 c^2 \left(a e^2 (5 e f+15 d g+16 e g x)-3 c d \left(3 d e f+d^2 g-2 e^2 f x-2 d e g x\right)\right)+2 b c^2 \left(11 a^2 e^3 g+3 a c e \left(d^2 g-e^2 f x+d e (f-3 g x)\right)+3 c^2 d^2 (-3 e f x+d (f-g x))\right)\right)+\left(b^4 e^3 g x+b^3 e^2 (a e g-c (e f+3 d g) x)-b^2 c e (-3 c d (e f+d g) x+a e (e f+3 d g+4 e g x))+2 c^2 \left(c^2 d^3 f x+a^2 e^2 (3 d g+e (f+g x))-a c d \left(d^2 g+3 e^2 f x+3 d e (f+g x)\right)\right)+b c \left(-3 a^2 e^3 g+c^2 d^2 (-3 e f x+d (f-g x))+3 a c e \left(d^2 g+e^2 f x+d e (f+3 g x)\right)\right)\right) \Big/ \left(c^3 \left(-b^2+4 a c\right) (a+x (b+c x))^2\right)+\frac{1}{\left(-b^2+4 a c\right)^{5/2}} 12 \left(c d^2+e (-b d+a e)\right) (2 c d f+2 a e g-b (e f+d g)) \text{ArcTan}\left[\frac{b+2 c x}{\sqrt{-b^2+4 a c}}\right]\right)$$

Problem 2482: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B x) (d+e x)^2}{\left(a+b x+c x^2\right)^{5/2}} \, dx$$

Optimal (type 2, 121 leaves, 2 steps) :

$$-\frac{2 \left(A b-2 a B-(b B-2 A c) x\right) (d+e x)^2}{3 \left(b^2-4 a c\right) \left(a+b x+c x^2\right)^{3/2}}-\frac{8 (b B d-2 A c d+A b e-2 a B e) \left(b d-2 a e+(2 c d-b e) x\right)}{3 \left(b^2-4 a c\right)^2 \sqrt{a+b x+c x^2}}$$

Result (type 2, 314 leaves) :

$$\frac{1}{3\left(b^2-4ac\right)^2\left(a+x\left(b+cx\right)\right)^{3/2}}\left(2A\left(-b^3\left(d^2+6dex-3e^2x^2\right)+4b\left(2a^2e^2+2c^2dx^2\left(3d-2ex\right)+3ac\left(d-ex\right)^2\right)+8c\left(-2a^2de+2c^2d^2x^3+acx\left(3d^2+e^2x^2\right)\right)+b^2\left(-4ae\left(d-3ex\right)+2cx\left(3d^2-12dex+e^2x^2\right)\right)\right)-2B\left(16a^3e^2+bx\left(8c^2d^2x^2+4bcdx\left(3d-ex\right)+b^2\left(3d^2-6dex-e^2x^2\right)\right)+8a^2\left(be\left(-2d+3ex\right)+c\left(d^2+3e^2x^2\right)\right)+2a\left(-8c^2dex^3+6bcx\left(d-ex\right)^2+b^2\left(d^2-12dex+3e^2x^2\right)\right)\right)\right)$$

Problem 2488: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(A+Bx\right)\left(d+ex\right)^5}{\left(a+bx+cx^2\right)^{7/2}}\,dx$$

Optimal (type 3, 942 leaves, 5 steps):

$$\left(2\left(d+ex\right)^4\left(2ac\left(Bd+Ae\right)-b\left(Acd+aBe\right)-\left(b^2Be-bc\left(Bd+Ae\right)+2c\left(Acd-aBe\right)\right)x\right)\right)\Big/\left(5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}\right)+\frac{1}{15c^2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}2\left(d+ex\right)^2\left(b^3Be\left(3cd^2-5ae^2\right)-4b^2cd\left(2Bcd^2+4Acde+aBe^2\right)-16ac^2e\left(5aBde+2A\left(cd^2+ae^2\right)\right)+4bc\left(9aBe\left(cd^2+ae^2\right)+4Acd\left(cd^2+3ae^2\right)\right)+\left(2b^3Bcde^2-5b^4Be^3+2b^2ce\left(7Bcd^2+8Acde+19aBe^2\right)-8bc^2\left(2Bcd^3+6Acd^2e+7aBde^2+2aAe^3\right)+8c^2\left(5aBe\left(cd^2-ae^2\right)+4Acd\left(cd^2+ae^2\right)\right)\right)x\right)+\frac{1}{15c^3\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}2\left(4b^4Bc^2d^3e^2+5b^5Be^3\left(cd^2-3ae^2\right)+32b^2c^3d^2\left(2Bcd^3+8Acd^2e+17aBde^2+16aAe^3\right)+64ac^3e\left(4A\left(cd^2+ae^2\right)^2+5aBde\left(cd^2+4ae^2\right)\right)-8b^3ce\left(16Ac^2d^3e+B\left(11c^2d^4+7acd^2e^2-20a^2e^4\right)\right)-16bc^2\left(8Acd\left(c^2d^4+6acd^2e^2+5a^2e^4\right)+aBe\left(18c^2d^4+71acd^2e^2+33a^2e^4\right)\right)+\left(10b^5Bcde^4-15b^6Be^5+2b^4Bce^3\left(3cd^2+85ae^2\right)+16b^3c^2de^2\left(6Bcd^2+8Acde-7aBe^2\right)-32c^3\left(8Acd\left(cd^2+ae^2\right)^2+5aBe\left(2c^2d^4+5acd^2e^2-3a^2e^4\right)\right)-16b^2c^2e\left(16Acde\left(2cd^2+ae^2\right)+B\left(15c^2d^4+29acd^2e^2+39a^2e^4\right)\right)+32bc^3\left(4Ae\left(5c^2d^4+6acd^2e^2+a^2e^4\right)+B\left(4c^2d^5+28acd^3e^2+29a^2de^4\right)\right)\right)x\right)+\frac{Be^5\,\text{ArcTanh}\left[\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right]}{c^{7/2}}$$

Result (type 3, 2431 leaves):

$$\frac{1}{\left(a+x\,(b+c\,x)\right)^{7/2}}$$

$$\left(a+b\,x+c\,x^2\right)^4 \left(\frac{1}{5\,c^5\,\left(-b^2+4\,a\,c\right)\,\left(a+b\,x+c\,x^2\right)^3}\,2\,\left(A\,b\,c^5\,d^5-2\,a\,B\,c^5\,d^5+5\,a\,b\,B\,c^4\,d^4\,e-\right.\right.$$

$$10\,a\,A\,c^5\,d^4\,e-10\,a\,b^2\,B\,c^3\,d^3\,e^2+10\,a\,A\,b\,c^4\,d^3\,e^2+20\,a^2\,B\,c^4\,d^3\,e^2+10\,a\,b^3\,B\,c^2\,d^2\,e^3-$$

$$10\,a\,A\,b^2\,c^3\,d^2\,e^3-30\,a^2\,b\,B\,c^3\,d^2\,e^3+20\,a^2\,A\,c^4\,d^2\,e^3-5\,a\,b^4\,B\,c\,d\,e^4+5\,a\,A\,b^3\,c^2\,d\,e^4+$$

$$20\,a^2\,b^2\,B\,c^2\,d\,e^4-15\,a^2\,A\,b\,c^3\,d\,e^4-10\,a^3\,B\,c^3\,d\,e^4+a\,b^5\,B\,e^5-a\,A\,b^4\,c\,e^5-5\,a^2\,b^3\,B\,c\,e^5+$$

$$4\,a^2\,A\,b^2\,c^2\,e^5+5\,a^3\,b\,B\,c^2\,e^5-2\,a^3\,A\,c^3\,e^5-b\,B\,c^5\,d^5\,x+2\,A\,c^6\,d^5\,x+5\,b^2\,B\,c^4\,d^4\,e\,x-$$

$$5\,A\,b\,c^5\,d^4\,e\,x-10\,a\,B\,c^5\,d^4\,e\,x-10\,b^3\,B\,c^3\,d^3\,e^2\,x+10\,A\,b^2\,c^4\,d^3\,e^2\,x+30\,a\,b\,B\,c^4\,d^3\,e^2\,x-$$

$$20\,a\,A\,c^5\,d^3\,e^2\,x+10\,b^4\,B\,c^2\,d^2\,e^3\,x-10\,A\,b^3\,c^3\,d^2\,e^3\,x-40\,a\,b^2\,B\,c^3\,d^2\,e^3\,x+$$

$$30\,a\,A\,b\,c^4\,d^2\,e^3\,x+20\,a^2\,B\,c^4\,d^2\,e^3\,x-5\,b^5\,B\,c\,d\,e^4\,x+5\,A\,b^4\,c^2\,d\,e^4\,x+25\,a\,b^3\,B\,c^2\,d\,e^4\,x-$$

$$20\,a\,A\,b^2\,c^3\,d\,e^4\,x-25\,a^2\,b\,B\,c^3\,d\,e^4\,x+10\,a^2\,A\,c^4\,d\,e^4\,x+b^6\,B\,e^5\,x-A\,b^5\,c\,e^5\,x-$$

$$\left.6\,a\,b^4\,B\,c\,e^5\,x+5\,a\,A\,b^3\,c^2\,e^5\,x+9\,a^2\,b^2\,B\,c^2\,e^5\,x-5\,a^2\,A\,b\,c^3\,e^5\,x-2\,a^3\,B\,c^3\,e^5\,x\right)+$$

$$\frac{1}{15\,c^5\,\left(-b^2+4\,a\,c\right)^2\,\left(a+b\,x+c\,x^2\right)^2}\,2\,\left(-8\,b^2\,B\,c^5\,d^5+16\,A\,b\,c^6\,d^5+15\,b^3\,B\,c^4\,d^4\,e-\right.$$

$$40\,A\,b^2\,c^5\,d^4\,e+20\,a\,b\,B\,c^5\,d^4\,e-30\,b^4\,B\,c^3\,d^3\,e^2+30\,A\,b^3\,c^4\,d^3\,e^2+140\,a\,b^2\,B\,c^4\,d^3\,e^2+$$

$$40\,a\,A\,b\,c^5\,d^3\,e^2-400\,a^2\,B\,c^5\,d^3\,e^2+30\,b^5\,B\,c^2\,d^2\,e^3-30\,A\,b^4\,c^3\,d^2\,e^3-220\,a\,b^3\,B\,c^3\,d^2\,e^3+$$

$$140\,a\,A\,b^2\,c^4\,d^2\,e^3+560\,a^2\,b\,B\,c^4\,d^2\,e^3-400\,a^2\,A\,c^5\,d^2\,e^3-15\,b^6\,B\,c\,d\,e^4+15\,A\,b^5\,c^2\,d\,e^4+$$

$$150\,a\,b^4\,B\,c^2\,d\,e^4-110\,a\,A\,b^3\,c^3\,d\,e^4-500\,a^2\,b^2\,B\,c^3\,d\,e^4+280\,a^2\,A\,b\,c^4\,d\,e^4+400\,a^3\,B\,c^4\,d\,e^4+$$

$$3\,b^7\,B\,e^5-3\,A\,b^6\,c\,e^5-38\,a\,b^5\,B\,c\,e^5+30\,a\,A\,b^4\,c^2\,e^5+157\,a^2\,b^3\,B\,c^2\,e^5-100\,a^2\,A\,b^2\,c^3\,e^5-$$

$$196\,a^3\,b\,B\,c^3\,e^5+80\,a^3\,A\,c^4\,e^5-16\,b\,B\,c^6\,d^5\,x+32\,A\,c^7\,d^5\,x+30\,b^2\,B\,c^5\,d^4\,e\,x-80\,A\,b\,c^6\,d^4\,e\,x+$$

$$40\,a\,B\,c^6\,d^4\,e\,x-10\,b^3\,B\,c^4\,d^3\,e^2\,x+60\,A\,b^2\,c^5\,d^3\,e^2\,x-120\,a\,b\,B\,c^5\,d^3\,e^2\,x+80\,a\,A\,c^6\,d^3\,e^2\,x-$$

$$40\,b^4\,B\,c^3\,d^2\,e^3\,x-10\,A\,b^3\,c^4\,d^2\,e^3\,x+360\,a\,b^2\,B\,c^4\,d^2\,e^3\,x-120\,a\,A\,b\,c^5\,d^2\,e^3\,x-$$

$$480\,a^2\,B\,c^5\,d^2\,e^3\,x+45\,b^5\,B\,c^2\,d\,e^4\,x-20\,A\,b^4\,c^3\,d\,e^4\,x-350\,a\,b^3\,B\,c^3\,d\,e^4\,x+$$

$$180\,a\,A\,b^2\,c^4\,d\,e^4\,x+600\,a^2\,b\,B\,c^4\,d\,e^4\,x-240\,a^2\,A\,c^5\,d\,e^4\,x-14\,b^6\,B\,c\,e^5\,x+9\,A\,b^5\,c^2\,e^5\,x+$$

$$\left.114\,a\,b^4\,B\,c^2\,e^5\,x-70\,a\,A\,b^3\,c^3\,e^5\,x-246\,a^2\,b^2\,B\,c^3\,e^5\,x+120\,a^2\,A\,b\,c^4\,e^5\,x+88\,a^3\,B\,c^4\,e^5\,x\right)+$$

$$\frac{1}{15\,c^4\,\left(-b^2+4\,a\,c\right)^3\,\left(a+b\,x+c\,x^2\right)}\,2\,\left(-64\,b^2\,B\,c^5\,d^5+128\,A\,b\,c^6\,d^5+120\,b^3\,B\,c^4\,d^4\,e-\right.$$

$$320\,A\,b^2\,c^5\,d^4\,e+160\,a\,b\,B\,c^5\,d^4\,e-40\,b^4\,B\,c^3\,d^3\,e^2+240\,A\,b^3\,c^4\,d^3\,e^2-480\,a\,b^2\,B\,c^4\,d^3\,e^2+$$

$$320\,a\,A\,b\,c^5\,d^3\,e^2-10\,b^5\,B\,c^2\,d^2\,e^3-40\,A\,b^4\,c^3\,d^2\,e^3+240\,a\,b^3\,B\,c^3\,d^2\,e^3-$$

$$480\,a\,A\,b^2\,c^4\,d^2\,e^3+480\,a^2\,b\,B\,c^4\,d^2\,e^3+30\,b^6\,B\,c\,d\,e^4-5\,A\,b^5\,c^2\,d\,e^4-350\,a\,b^4\,B\,c^2\,d\,e^4+$$

$$120\,a\,A\,b^3\,c^3\,d\,e^4+1200\,a^2\,b^2\,B\,c^3\,d\,e^4+240\,a^2\,A\,b\,c^4\,d\,e^4-2400\,a^3\,B\,c^4\,d\,e^4-$$

$$11\,b^7\,B\,e^5+6\,A\,b^6\,c\,e^5+141\,a\,b^5\,B\,c\,e^5-70\,a\,A\,b^4\,c^2\,e^5-624\,a^2\,b^3\,B\,c^2\,e^5+$$

$$240\,a^2\,A\,b^2\,c^3\,e^5+1072\,a^3\,b\,B\,c^3\,e^5-480\,a^3\,A\,c^4\,e^5-128\,b\,B\,c^6\,d^5\,x+256\,A\,c^7\,d^5\,x+$$

$$240\,b^2\,B\,c^5\,d^4\,e\,x-640\,A\,b\,c^6\,d^4\,e\,x+320\,a\,B\,c^6\,d^4\,e\,x-80\,b^3\,B\,c^4\,d^3\,e^2\,x+$$

$$480\,A\,b^2\,c^5\,d^3\,e^2\,x-960\,a\,b\,B\,c^5\,d^3\,e^2\,x+640\,a\,A\,c^6\,d^3\,e^2\,x-20\,b^4\,B\,c^3\,d^2\,e^3\,x-$$

$$80\,A\,b^3\,c^4\,d^2\,e^3\,x+480\,a\,b^2\,B\,c^4\,d^2\,e^3\,x-960\,a\,A\,b\,c^5\,d^2\,e^3\,x+960\,a^2\,B\,c^5\,d^2\,e^3\,x-$$

$$15\,b^5\,B\,c^2\,d\,e^4\,x-10\,A\,b^4\,c^3\,d\,e^4\,x+200\,a\,b^3\,B\,c^3\,d\,e^4\,x+240\,a\,A\,b^2\,c^4\,d\,e^4\,x-$$

$$1200\,a^2\,b\,B\,c^4\,d\,e^4\,x+480\,a^2\,A\,c^5\,d\,e^4\,x+23\,b^6\,B\,c\,e^5\,x-3\,A\,b^5\,c^2\,e^5\,x-258\,a\,b^4\,B\,c^2\,e^5\,x+$$

$$\left.\left.40\,a\,A\,b^3\,c^3\,e^5\,x+912\,a^2\,b^2\,B\,c^3\,e^5\,x-240\,a^2\,A\,b\,c^4\,e^5\,x-736\,a^3\,B\,c^4\,e^5\,x\right)\right)+$$

$$\frac{B\,e^5\,\left(a+b\,x+c\,x^2\right)^{7/2}\,\mathrm{Log}\left[b+2\,c\,x+2\,\sqrt{c}\,\sqrt{a+b\,x+c\,x^2}\right]}{c^{7/2}\,\left(a+x\,(b+c\,x)\right)^{7/2}}$$

Problem 2489: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B x) (d+e x)^4}{\left(a+b x+c x^2\right)^{7/2}} \, dx$$

Optimal (type 2, 210 leaves, 3 steps):

$$-\frac{2 \left(A b-2 a B-(b B-2 A c) x\right) (d+e x)^4}{5 \left(b^2-4 a c\right) \left(a+b x+c x^2\right)^{5/2}}-\left(16 \left(b B d-2 A c d+A b e-2 a B e\right) (d+e x)^2 \left(b d-2 a e+(2 c d-b e) x\right)\right)\Big/\left(15 \left(b^2-4 a c\right)^2 \left(a+b x+c x^2\right)^{3/2}\right)+\left(128 \left(b B d-2 A c d+A b e-2 a B e\right) \left(c d^2-b d e+a e^2\right) \left(b d-2 a e+(2 c d-b e) x\right)\right)\Big/\left(15 \left(b^2-4 a c\right)^3 \sqrt{a+b x+c x^2}\right)$$

Result (type 2, 1196 leaves):

$$\frac{1}{15 \left(b^2-4 a c\right)^3 \left(a+x (b+c x)\right)^{5/2}} \Big(-2 A \Big(b^5 \left(3 d^4+20 d^3 e x+90 d^2 e^2 x^2-60 d e^3 x^3-5 e^4 x^4\right)+16 b \Big(8 a^4 e^4+8 c^4 d^3 x^4 (5 d-4 e x)+15 a^2 c^2 (d-e x)^4+4 a^3 c e^2 \left(9 d^2-10 d e x+5 e^2 x^2\right)+4 a c^3 d x^2 \left(15 d^3-20 d^2 e x+15 d e^2 x^2-6 e^3 x^3\right)\Big)+8 b^3 \Big(-5 a c (d-e x)^2 \left(d^2+14 d e x-3 e^2 x^2\right)+6 a^2 e^2 \left(d^2-10 d e x+5 e^2 x^2\right)+2 c^2 d x^2 \left(5 d^3-60 d^2 e x+45 d e^2 x^2-2 e^3 x^3\right)\Big)+32 c \Big(-8 a^4 d e^3+8 c^4 d^4 x^5+4 a c^3 d^2 x^3 \left(5 d^2+3 e^2 x^2\right)-4 a^3 c d e \left(3 d^2+5 e^2 x^2\right)+3 a^2 c^2 x \left(5 d^4+10 d^2 e^2 x^2+e^4 x^4\right)\Big)+16 b^2 \Big(4 a^3 e^3 (-3 d+5 e x)+2 c^3 d^2 x^3 \left(15 d^2-40 d e x+9 e^2 x^2\right)+6 a^2 c e \left(-2 d^3+15 d^2 e x-10 d e^2 x^2+5 e^3 x^3\right)+3 a c^2 x \left(5 d^4-40 d^3 e x+30 d^2 e^2 x^2-20 d e^3 x^3+e^4 x^4\right)\Big)+2 b^4 \Big(4 a e \left(d^3+15 d^2 e x-45 d e^2 x^2+5 e^3 x^3\right)-c x \left(5 d^4+80 d^3 e x-270 d^2 e^2 x^2+40 d e^3 x^3+e^4 x^4\right)\Big)\Big)+2 B \Big(256 a^5 e^4+128 a^4 e^2 \left(b e (-4 d+5 e x)+c \left(3 d^2+5 e^2 x^2\right)\right)+b x \Big(128 c^4 d^4 x^4+64 b c^3 d^3 x^3 (5 d-3 e x)+48 b^2 c^2 d^2 x^2 \left(5 d^2-10 d e x+e^2 x^2\right)+8 b^3 c d x \left(5 d^3-45 d^2 e x+15 d e^2 x^2+e^3 x^3\right)+b^4 \left(-5 d^4-60 d^3 e x+90 d^2 e^2 x^2+20 d e^3 x^3+3 e^4 x^4\right)\Big)+32 a^3 \Big(b^2 e^2 \left(9 d^2-40 d e x+15 e^2 x^2\right)+2 b c e \left(-6 d^3+15 d^2 e x-20 d e^2 x^2+15 e^3 x^3\right)+3 c^2 \left(d^4+10 d^2 e^2 x^2+5 e^4 x^4\right)\Big)-16 a^2 \Big(-15 b c^2 x (d-e x)^4+8 c^3 d e x^3 \left(5 d^2+3 e^2 x^2\right)+b^3 e \left(2 d^3-45 d^2 e x+60 d e^2 x^2-5 e^3 x^3\right)-3 b^2 c \left(d^4-20 d^3 e x+30 d^2 e^2 x^2-40 d e^3 x^3+5 e^4 x^4\right)\Big)-2 a \Big(128 c^4 d^3 e x^5+20 b^3 c x (d-e x)^2 \left(-3 d^2+14 d e x+e^2 x^2\right)-32 b c^3 d^2 x^3 \left(5 d^2-10 d e x+9 e^2 x^2\right)+48 b^2 c^2 d x^2 \left(-5 d^3+10 d^2 e x-15 d e^2 x^2+2 e^3 x^3\right)+b^4 \left(d^4+40 d^3 e x-270 d^2 e^2 x^2+80 d e^3 x^3+5 e^4 x^4\right)\Big)\Big)\Big)$$

Problem 2490: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+Bx)\,(d+e\,x)^3}{\left(a+b\,x+c\,x^2\right)^{7/2}}\,dx$$

Optimal (type 2, 264 leaves, 3 steps):

$$-\frac{2\,\left(A\,b-2\,a\,B-(b\,B-2\,A\,c)\,x\right)\,(d+e\,x)^3}{5\,\left(b^2-4\,a\,c\right)\,\left(a+b\,x+c\,x^2\right)^{5/2}}-\left(4\,(d+e\,x)^2\,\left(4\,a\,A\,c\,e+b^2\,(4\,B\,d+3\,A\,e)-8\,b\,(A\,c\,d+a\,B\,e)-\left(b^2\,B\,e-8\,b\,c\,(B\,d+A\,e)+4\,c\,(4\,A\,c\,d+3\,a\,B\,e)\right)\,x\right)\right)\Big/\left(15\,\left(b^2-4\,a\,c\right)^2\,\left(a+b\,x+c\,x^2\right)^{3/2}\right)-\left(16\,\left(b^2\,e\,(5\,B\,d+3\,A\,e)+4\,c\,\left(4\,A\,c\,d^2+3\,a\,B\,d\,e+a\,A\,e^2\right)-8\,b\,\left(B\,c\,d^2+2\,A\,c\,d\,e+a\,B\,e^2\right)\right)\,\left(b\,d-2\,a\,e+(2\,c\,d-b\,e)\,x\right)\right)\Big/\left(15\,\left(b^2-4\,a\,c\right)^3\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 2, 965 leaves):

$$-\frac{1}{15\,\left(b^2-4\,a\,c\right)^3\,\left(a+x\,(b+c\,x)\right)^{5/2}}2\,\Big(A\,\Big(3\,b^5\,\left(d^3+5\,d^2\,e\,x+15\,d\,e^2\,x^2-5\,e^3\,x^3\right)+32\,c\,\left(-2\,a^4\,e^3+8\,c^4\,d^3\,x^5+15\,a^2\,c^2\,d\,x\,\left(d^2+e^2\,x^2\right)+2\,a\,c^3\,d\,x^3\,\left(10\,d^2+3\,e^2\,x^2\right)-a^3\,c\,e\,\left(9\,d^2+5\,e^2\,x^2\right)\right)+16\,b\,c\,\Big(2\,a^3\,e^2\,(9\,d-5\,e\,x)+8\,c^3\,d^2\,x^4\,(5\,d-3\,e\,x)+15\,a^2\,c\,(d-e\,x)^3-6\,a\,c^2\,x^2\,\left(-10\,d^3+10\,d^2\,e\,x-5\,d\,e^2\,x^2+e^3\,x^3\right)\Big)-48\,b^2\,\left(a^3\,e^3+c^3\,d\,x^3\,\left(-10\,d^2+20\,d\,e\,x-3\,e^2\,x^2\right)+a^2\,c\,e\,\left(3\,d^2-15\,d\,e\,x+5\,e^2\,x^2\right)+5\,a\,c^2\,x\,\left(-d^3+6\,d^2\,e\,x-3\,d\,e^2\,x^2+e^3\,x^3\right)\right)+2\,b^4\,\left(3\,a\,e\,\left(d^2+10\,d\,e\,x-15\,e^2\,x^2\right)-5\,c\,x\,\left(d^3+12\,d^2\,e\,x-27\,d\,e^2\,x^2+2\,e^3\,x^3\right)\right)+8\,b^3\,\left(3\,a^2\,e^2\,(d-5\,e\,x)+c^2\,x^2\,\left(10\,d^3-90\,d^2\,e\,x+45\,d\,e^2\,x^2-e^3\,x^3\right)-5\,a\,c\,\left(d^3+9\,d^2\,e\,x-15\,d\,e^2\,x^2+5\,e^3\,x^3\right)\right)\Big)+B\,\Big(64\,a^4\,e^2\,(-3\,c\,d+2\,b\,e)-16\,a^3\,\left(b^2\,e^2\,(9\,d-20\,e\,x)-2\,b\,c\,e\,\left(9\,d^2-15\,d\,e\,x+10\,e^2\,x^2\right)+6\,c^2\,\left(d^3+5\,d\,e^2\,x^2\right)\right)+24\,a^2\,\Big(10\,b\,c^2\,x\,(-d+e\,x)^3+4\,c^3\,e\,x^3\,\left(5\,d^2+e^2\,x^2\right)+b^3\,e\,\left(d^2-15\,d\,e\,x+10\,e^2\,x^2\right)-2\,b^2\,c\,\left(d^3-15\,d^2\,e\,x+15\,d\,e^2\,x^2-10\,e^3\,x^3\right)\Big)-b\,x\,\left(128\,c^4\,d^3\,x^4+16\,b\,c^3\,d^2\,x^3\,(20\,d-9\,e\,x)+24\,b^2\,c^2\,d\,x^2\,\left(10\,d^2-15\,d\,e\,x+e^2\,x^2\right)-5\,b^4\,\left(d^3+9\,d^2\,e\,x-9\,d\,e^2\,x^2-e^3\,x^3\right)+2\,b^3\,c\,x\,\left(20\,d^3-135\,d^2\,e\,x+30\,d\,e^2\,x^2+e^3\,x^3\right)\right)+2\,a\,\left(96\,c^4\,d^2\,e\,x^5-16\,b\,c^3\,d\,x^3\,\left(10\,d^2-15\,d\,e\,x+9\,e^2\,x^2\right)+24\,b^2\,c^2\,x^2\,\left(-10\,d^3+15\,d^2\,e\,x-15\,d\,e^2\,x^2+e^3\,x^3\right)+60\,b^3\,c\,x\,\left(-d^3+5\,d^2\,e\,x-5\,d\,e^2\,x^2+e^3\,x^3\right)+b^4\,\left(d^3+30\,d^2\,e\,x-135\,d\,e^2\,x^2+20\,e^3\,x^3\right)\right)\Big)\Big)$$

Problem 2575: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{5+\sqrt{35}+10\,x}{\sqrt{1+2\,x}\,\left(2+3\,x+5\,x^2\right)}\,dx$$

Optimal (type 3, 105 leaves, 6 steps):

$$-2\sqrt{\frac{10}{-2+\sqrt{35}}}\ \text{ArcTan}\left[\frac{\sqrt{2+\sqrt{35}}-\sqrt{10+20\,x}}{\sqrt{-2+\sqrt{35}}}\right]+$$

$$2\sqrt{\frac{10}{-2+\sqrt{35}}}\ \text{ArcTan}\left[\frac{\sqrt{2+\sqrt{35}}+\sqrt{10+20\,x}}{\sqrt{-2+\sqrt{35}}}\right]$$

Result (type 3, 130 leaves):

$$2\sqrt{\frac{5}{31}}\left(\frac{\left(-2\,i+\sqrt{31}-i\sqrt{35}\right)\text{ArcTan}\left[\frac{\sqrt{5+10\,x}}{\sqrt{-2-i\sqrt{31}}}\right]}{\sqrt{-2-i\sqrt{31}}}+\frac{\left(2\,i+\sqrt{31}+i\sqrt{35}\right)\text{ArcTan}\left[\frac{\sqrt{5+10\,x}}{\sqrt{-2+i\sqrt{31}}}\right]}{\sqrt{-2+i\sqrt{31}}}\right)$$

Problem 2630: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{(A+B\,x)\,(d+e\,x)^{3/2}}{\sqrt{a+b\,x+c\,x^2}}\,dx$$

Optimal (type 4, 545 leaves, 7 steps):

$$\frac{2\left(3 B c d-4 b B e+5 A c e\right)\sqrt{d+e x}\sqrt{a+b x+c x^2}}{15 c^2}+\frac{2 B\left(d+e x\right)^{3/2}\sqrt{a+b x+c x^2}}{5 c}+$$

$$\left(\sqrt{2}\sqrt{b^2-4 a c}\left(10 A c e\left(2 c d-b e\right)+B\left(3 c^2 d^2+8 b^2 e^2-c e\left(13 b d+9 a e\right)\right)\right)\sqrt{d+e x}\right.$$

$$\left.\sqrt{-\frac{c\left(a+b x+c x^2\right)}{b^2-4 a c}}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4 a c}+2 c x}{\sqrt{b^2-4 a c}}}}{\sqrt{2}}\right],-\frac{2\sqrt{b^2-4 a c}\,e}{2 c d-\left(b+\sqrt{b^2-4 a c}\right)e}\right]\right)\Big/$$

$$\left(15 c^3 e\sqrt{\frac{c\left(d+e x\right)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right)e}}\sqrt{a+b x+c x^2}\right)-$$

$$\left(2\sqrt{2}\sqrt{b^2-4 a c}\left(3 B c d-4 b B e+5 A c e\right)\left(c d^2-b d e+a e^2\right)\sqrt{\frac{c\left(d+e x\right)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right)e}}\right.$$

$$\left.\sqrt{-\frac{c\left(a+b x+c x^2\right)}{b^2-4 a c}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4 a c}+2 c x}{\sqrt{b^2-4 a c}}}}{\sqrt{2}}\right],-\frac{2\sqrt{b^2-4 a c}\,e}{2 c d-\left(b+\sqrt{b^2-4 a c}\right)e}\right]\right)\Big/$$

$$\left(15 c^3 e\sqrt{d+e x}\sqrt{a+b x+c x^2}\right)$$

Result (type 4, 4932 leaves) :

$$\frac{\sqrt{d+e x}\left(\frac{2\left(6 B c d-4 b B e+5 A c e\right)}{15 c^2}+\frac{2 B e x}{5 c}\right)\left(a+b x+c x^2\right)}{\sqrt{a+x\left(b+c x\right)}}+\frac{1}{15 c^2 e^2\sqrt{a+x\left(b+c x\right)}}$$

$$2\sqrt{a+b\,x+c\,x^2}\;\Bigg(\Bigg(\left(3\,B\,c^2\,d^2-13\,b\,B\,c\,d\,e+20\,A\,c^2\,d\,e+8\,b^2\,B\,e^2-10\,A\,b\,c\,e^2-9\,a\,B\,c\,e^2\right)$$

$$\left(d+e\,x\right)^{3/2}\left(c+\frac{c\,d^2}{\left(d+e\,x\right)^2}-\frac{b\,d\,e}{\left(d+e\,x\right)^2}+\frac{a\,e^2}{\left(d+e\,x\right)^2}-\frac{2\,c\,d}{d+e\,x}+\frac{b\,e}{d+e\,x}\right)\Bigg)\Bigg/$$

$$\left(c\sqrt{\frac{\left(d+e\,x\right)^2\left(c\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)}{e^2}}\right)-\frac{1}{c\sqrt{\frac{\left(d+e\,x\right)^2\left(c\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)}{e^2}}}$$

$$\left(c\,d^2-b\,d\,e+a\,e^2\right)\left(d+e\,x\right)\sqrt{c+\frac{c\,d^2}{\left(d+e\,x\right)^2}-\frac{b\,d\,e}{\left(d+e\,x\right)^2}+\frac{a\,e^2}{\left(d+e\,x\right)^2}-\frac{2\,c\,d}{d+e\,x}+\frac{b\,e}{d+e\,x}}$$

$$\Bigg(\Bigg(3\,\mathbb{i}\,B\,c^2\,d^2\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\left(d+e\,x\right)}}$$

$$\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\left(d+e\,x\right)}}\;\Bigg(\text{EllipticE}\Big[\mathbb{i}\,\text{ArcSinh}\Big[$$

$$\frac{\sqrt{2}\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\;\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-\text{EllipticF}\Big[\mathbb{i}$$

$$\text{ArcSinh}\Big[\frac{\sqrt{2}\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\;\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(2\sqrt{2}\left(c\,d^2-b\,d\,e+a\,e^2\right)\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}$$

$$\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)-\Bigg(13\,\mathrm{i}\,b\,B\,c\,d\,e$$

$$\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\,(c\,d^2-b\,d\,e+a\,e^2)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}$$

$$\sqrt{1-\frac{2\,(c\,d^2-b\,d\,e+a\,e^2)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\Bigg(\text{EllipticE}\Big[\mathrm{i}\,\text{ArcSinh}\Big[$$

$$\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-\text{EllipticF}\Big[\mathrm{i}$$

$$\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]\Bigg)\Bigg)\Big/$$

$$\Bigg(2\,\sqrt{2}\,(c\,d^2-b\,d\,e+a\,e^2)\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}$$

$$\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\Bigg)+\Bigg(5\,\mathrm{i}\,\sqrt{2}\,A\,c^2\,d\,e$$

$$\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\,(c\,d^2-b\,d\,e+a\,e^2)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}$$

$$\sqrt{1-\frac{2\,(c\,d^2-b\,d\,e+a\,e^2)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}$$

$$\Bigg(\text{EllipticE}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\Big],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\Big]-$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+\left(2\,\mathbb{i}\,\sqrt{2}\right.$$

$$b^2\,B\,e^2\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}$$

$$\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-$$

$$\left(5\,\mathbb{i}\,A\,b\,c\,e^2\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Bigg/\left(\sqrt{2}\left(c d^2-b d e+a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)-$$

$$\left(9\,\mathbb{i}\,a B c e^2\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Bigg/\left(2\sqrt{2}\left(c d^2-b d e+a e^2\right)\right.$$

$$\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\ \sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\Bigg)+$$

$$\Bigg(3\,\mathrm{i}\,B c^2 d\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\text{EllipticF}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\Big],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\Big]\Bigg)\Big/$$

$$\left(\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\ \sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)-$$

$$\Bigg(2\,\mathrm{i}\sqrt{2}\,b B c e\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\text{EllipticF}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\Big],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\Big]\Bigg)\Big/$$

$$\left(\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\ \sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+$$

$$\Bigg(5\,\mathrm{i}\,A c^2 e\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Bigg/$$

$$\left.\left.\left(\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)\right)\right)$$

Problem 2631: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(A+B\,x)\,\sqrt{d+e\,x}}{\sqrt{a+b\,x+c\,x^2}}\,dx$$

Optimal (type 4, 452 leaves, 6 steps):

$$\frac{2\,B\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}}{3\,c}+\left(\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,\left(B\,c\,d-2\,b\,B\,e+3\,A\,c\,e\right)\,\sqrt{d+e\,x}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Bigg/$$

$$\left(3\,c^2\,e\,\sqrt{\frac{c\,\left(d+e\,x\right)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{a+b\,x+c\,x^2}\right)-$$

$$\left(2\,\sqrt{2}\,B\,\sqrt{b^2-4\,a\,c}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\sqrt{\frac{c\,\left(d+e\,x\right)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Bigg/$$

$$\left(3\,c^2\,e\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 781 leaves) :

$$\frac{2\,B\,\sqrt{d+e\,x}\,\left(a+b\,x+c\,x^2\right)}{3\,c\,\sqrt{a+x\,\left(b+c\,x\right)}}+\frac{1}{3\,c^2\,e^2\,\sqrt{a+x\,\left(b+c\,x\right)}\,\sqrt{\frac{(d+e\,x)^2\,\left(c\,\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\,\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)}{e^2}}}$$

$$2\,\left(d+e\,x\right)^{3/2}\,\sqrt{a+b\,x+c\,x^2}\,\left(\left(B\,c\,d-2\,b\,B\,e+3\,A\,c\,e\right)\,\left(c\,\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\,\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)+\right.$$

$$\frac{1}{2\,\sqrt{2}\,\sqrt{\frac{c\,d^2+e\,\left(-b\,d+a\,e\right)}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}\,\sqrt{d+e\,x}}\,\mathrm{i}\,\sqrt{1-\frac{2\,\left(c\,d^2+e\,\left(-b\,d+a\,e\right)\right)}{\left(2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\sqrt{1+\frac{2\,\left(c\,d^2+e\,\left(-b\,d+a\,e\right)\right)}{\left(-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\left(\left(-B\,c\,d+2\,b\,B\,e-3\,A\,c\,e\right)\,\left(2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\right.$$

$$\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{\frac{c\,d^2-b\,d\,e+a\,e^2}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}}{\sqrt{d+e\,x}}\right],\,-\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}\right]+$$

$$\left(2\,b^2\,B\,e^2-b\,e\,\left(3\,B\,c\,d+3\,A\,c\,e+2\,B\,\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)+\right.$$

$$\left.c\,\left(-2\,a\,B\,e^2+B\,d\,\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+3\,A\,e\,\left(2\,c\,d+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\right)\right)$$

$$\left.\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{\frac{c\,d^2-b\,d\,e+a\,e^2}{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}}}{\sqrt{d+e\,x}}\right],\,-\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}\right]\right)\right)$$

Problem 2632: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{A+B\,x}{\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}}\,dx$$

Optimal (type 4, 393 leaves, 5 steps):

$$\left(\sqrt{2}\, B\, \sqrt{b^2-4\,a\,c}\, \sqrt{d+e\,x}\, \sqrt{-\frac{c\,(a+b\,x+c\,x^2)}{b^2-4\,a\,c}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],\, -\frac{2\,\sqrt{b^2-4\,a\,c}\,\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/$$

$$\left(c\,e\,\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{a+b\,x+c\,x^2}\right)-$$

$$\left(2\,\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,\,(B\,d-A\,e)\,\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{-\frac{c\,(a+b\,x+c\,x^2)}{b^2-4\,a\,c}}\,\text{EllipticF}\left[\right.\right.$$

$$\left.\left.\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],\, -\frac{2\,\sqrt{b^2-4\,a\,c}\,\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/\left(c\,e\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 2732 leaves):

$$-\frac{1}{e^2\,\sqrt{a+x\,(b+c\,x)}}\,2\,\sqrt{a+b\,x+c\,x^2}$$

$$\left(-\frac{B\,(d+e\,x)^{3/2}\left(c+\frac{c\,d^2}{(d+e\,x)^2}-\frac{b\,d\,e}{(d+e\,x)^2}+\frac{a\,e^2}{(d+e\,x)^2}-\frac{2\,c\,d}{d+e\,x}+\frac{b\,e}{d+e\,x}\right)}{c\,\sqrt{\frac{(d+e\,x)^2\left(c\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)}{e^2}}}+\frac{1}{c\,\sqrt{\frac{(d+e\,x)^2\left(c\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)}{e^2}}}\right.$$

$$(d+e\,x)\,\sqrt{c+\frac{c\,d^2}{(d+e\,x)^2}-\frac{b\,d\,e}{(d+e\,x)^2}+\frac{a\,e^2}{(d+e\,x)^2}-\frac{2\,c\,d}{d+e\,x}+\frac{b\,e}{d+e\,x}}$$

$$\left(\left(\left(\mathrm{i}\, B\, c\, d^2 \left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right) \sqrt{1 - \frac{2 \left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}\right) (d + e x)}}\right.\right.\right.$$

$$\sqrt{1 - \frac{2 \left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right) (d + e x)}}$$

$$\left(\text{EllipticE}\left[\mathrm{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right] - \right.$$

$$\text{EllipticF}\left[\mathrm{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right]\right)\right) \Big/ \left(2 \sqrt{2} \left(c d^2 - b d e + a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}} \sqrt{c + \frac{c d^2 - b d e + a e^2}{(d + e x)^2} + \frac{-2 c d + b e}{d + e x}}\right) -$$

$$\left(\mathrm{i}\, b\, B\, d\, e \left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right) \sqrt{1 - \frac{2 \left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}\right) (d + e x)}}\right.$$

$$\sqrt{1 - \frac{2 \left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right) (d + e x)}}$$

$$\left(\text{EllipticE}\left[\mathrm{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right] - \right.$$

$$\text{EllipticF}\left[\mathrm{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(2\,\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+$$

$$\left(\mathrm{i}\,a\,B\,e^2\,\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}$$

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(2\,\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+$$

$$\left(\mathrm{i}\,B\,c\,d\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}$$

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Big/$$

$$\left(\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\,\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)-$$

$$\left(i\,A\,c\,e\,\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Big/$$

$$\left.\left(\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\,\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)\right)$$

Problem 2633: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{A+B x}{(d+e x)^{3/2}\sqrt{a+b x+c x^2}}\,dx$$

Optimal (type 4, 460 leaves, 6 steps):

$$\frac{2\,(B\,d-A\,e)\,\sqrt{a+b\,x+c\,x^2}}{\left(c\,d^2-b\,d\,e+a\,e^2\right)\sqrt{d+e\,x}}-\left(\sqrt{2}\,\sqrt{b^2-4\,a\,c}\,(B\,d-A\,e)\,\sqrt{d+e\,x}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}\right]\right)\Big/$$

$$\left(e\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}}\,\sqrt{a+b\,x+c\,x^2}\right)+$$

$$\left(2\,\sqrt{2}\,B\,\sqrt{b^2-4\,a\,c}\,\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\,\text{EllipticF}\right[$$

$$\left.\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)e}\right]\right)\Big/\left(c\,e\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 550 leaves):

$$-\frac{1}{\sqrt{2}\, e^2 \left(c d^2+e \left(-b d+a e\right)\right) \sqrt{\frac{c d^2+e \left(-b d+a e\right)}{-2 c d+b e+\sqrt{\left(b^2-4 a c\right) e^2}}}\, \sqrt{a+x \left(b+c x\right)}}$$

$$\mathbb{i} \left(d+e x\right) \sqrt{1-\frac{2 \left(c d^2+e \left(-b d+a e\right)\right)}{\left(2 c d-b e+\sqrt{\left(b^2-4 a c\right) e^2}\right) \left(d+e x\right)}}$$

$$\sqrt{1+\frac{2 \left(c d^2+e \left(-b d+a e\right)\right)}{\left(-2 c d+b e+\sqrt{\left(b^2-4 a c\right) e^2}\right) \left(d+e x\right)}} \left(\left(-B d+A e\right) \left(2 c d-b e+\sqrt{\left(b^2-4 a c\right) e^2}\right)\right.$$

$$\text{EllipticE}\left[\mathbb{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{\frac{c d^2-b d e+a e^2}{-2 c d+b e+\sqrt{\left(b^2-4 a c\right) e^2}}}}{\sqrt{d+e x}}\right], -\frac{-2 c d+b e+\sqrt{\left(b^2-4 a c\right) e^2}}{2 c d-b e+\sqrt{\left(b^2-4 a c\right) e^2}}\right]+$$

$$\left(-2 a B e^2+B d \sqrt{\left(b^2-4 a c\right) e^2}+b e \left(B d+A e\right)-A e \left(2 c d+\sqrt{\left(b^2-4 a c\right) e^2}\right)\right)$$

$$\left.\text{EllipticF}\left[\mathbb{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{\frac{c d^2-b d e+a e^2}{-2 c d+b e+\sqrt{\left(b^2-4 a c\right) e^2}}}}{\sqrt{d+e x}}\right], -\frac{-2 c d+b e+\sqrt{\left(b^2-4 a c\right) e^2}}{2 c d-b e+\sqrt{\left(b^2-4 a c\right) e^2}}\right]\right)$$

Problem 2634: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{A+B x}{\left(d+e x\right)^{5/2} \sqrt{a+b x+c x^2}}\, dx$$

Optimal (type 4, 591 leaves, 7 steps):

$$\frac{2\left(B d-A e\right)\sqrt{a+b x+c x^2}}{3\left(c d^2-b d e+a e^2\right)\left(d+e x\right)^{3/2}}-\frac{2\left(2 A e\left(2 c d-b e\right)-B\left(c d^2+e\left(b d-3 a e\right)\right)\right)\sqrt{a+b x+c x^2}}{3\left(c d^2-b d e+a e^2\right)^2\sqrt{d+e x}}+$$

$$\left(\sqrt{2}\sqrt{b^2-4 a c}\left(2 A e\left(2 c d-b e\right)-B\left(c d^2+e\left(b d-3 a e\right)\right)\right)\sqrt{d+e x}\sqrt{-\frac{c\left(a+b x+c x^2\right)}{b^2-4 a c}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4 a c}+2 c x}{\sqrt{b^2-4 a c}}}}{\sqrt{2}}\right],-\frac{2\sqrt{b^2-4 a c}\, e}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}\right]\right)\Big/$$

$$\left(3 e\left(c d^2-b d e+a e^2\right)^2\sqrt{\frac{c\left(d+e x\right)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}}\sqrt{a+b x+c x^2}\right)+$$

$$\left(2\sqrt{2}\sqrt{b^2-4 a c}\left(B d-A e\right)\sqrt{\frac{c\left(d+e x\right)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}}\sqrt{-\frac{c\left(a+b x+c x^2\right)}{b^2-4 a c}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4 a c}+2 c x}{\sqrt{b^2-4 a c}}}}{\sqrt{2}}\right],-\frac{2\sqrt{b^2-4 a c}\, e}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}\right]\right)\Big/$$

$$\left(3 e\left(c d^2-b d e+a e^2\right)\sqrt{d+e x}\sqrt{a+b x+c x^2}\right)$$

Result (type 4, 4053 leaves) :

$$\frac{1}{\sqrt{a+x\left(b+c x\right)}}\sqrt{d+e x}\left(a+b x+c x^2\right)$$

$$\left(-\frac{2\left(-B d+A e\right)}{3\left(c d^2-b d e+a e^2\right)\left(d+e x\right)^2}-\frac{2\left(-B c d^2-b B d e+4 A c d e-2 A b e^2+3 a B e^2\right)}{3\left(c d^2-b d e+a e^2\right)^2\left(d+e x\right)}\right)+$$

$$\frac{1}{3 e^2\left(c d^2-b d e+a e^2\right)^2\sqrt{a+x\left(b+c x\right)}}$$

$$2 c \sqrt{a + b x + c x^2} \left(\left(\left(-B c d^2 - b B d e + 4 A c d e - 2 A b e^2 + 3 a B e^2\right)\right.\right.$$

$$\left.\left.(d + e x)^{3/2} \left(c + \frac{c d^2}{(d + e x)^2} - \frac{b d e}{(d + e x)^2} + \frac{a e^2}{(d + e x)^2} - \frac{2 c d}{d + e x} + \frac{b e}{d + e x}\right)\right)\right/$$

$$\left(c \sqrt{\frac{(d + e x)^2 \left(c \left(-1 + \frac{d}{d+e x}\right)^2 + \frac{e \left(b - \frac{b d}{d+e x} + \frac{a e}{d+e x}\right)}{d+e x}\right)}{e^2}}\right) + \frac{1}{c \sqrt{\frac{(d+e x)^2 \left(c \left(-1+\frac{d}{d+e x}\right)^2 + \frac{e \left(b - \frac{b d}{d+e x} + \frac{a e}{d+e x}\right)}{d+e x}\right)}{e^2}}}$$

$$\left(c d^2 - b d e + a e^2\right) (d + e x) \sqrt{c + \frac{c d^2}{(d + e x)^2} - \frac{b d e}{(d + e x)^2} + \frac{a e^2}{(d + e x)^2} - \frac{2 c d}{d + e x} + \frac{b e}{d + e x}}$$

$$\left(\left(\left(i B c d^2 \left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right) \sqrt{1 - \frac{2 \left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}\right) (d + e x)}}\right.\right.\right.$$

$$\sqrt{1 - \frac{2 \left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right) (d + e x)}}$$

$$\left(\text{EllipticE}\left[i \,\text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right] - \right.$$

$$\text{EllipticF}\left[i \,\text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right]\right)\right) \Big/ \left(2 \sqrt{2} \left(c d^2 - b d e + a e^2\right)\right.$$

$$\sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}} \sqrt{c + \frac{c d^2 - b d e + a e^2}{(d + e x)^2} + \frac{-2 c d + b e}{d + e x}}\Bigg) +$$

$$\Bigg(\mathrm{i}\, b\, B\, d\, e \left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right) \sqrt{1 - \frac{2\left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}\right)(d + e x)}}$$

$$\sqrt{1 - \frac{2\left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right)(d + e x)}} \Bigg(\text{EllipticE}\Big[\mathrm{i}\, \text{ArcSinh}\Big[$$

$$\frac{\sqrt{2}\sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\Big], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\Big] - \text{EllipticF}\Big[\mathrm{i}$$

$$\text{ArcSinh}\Big[\frac{\sqrt{2}\sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\Big], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\Big]\Bigg)\Bigg) \Big/$$

$$\Bigg(2\sqrt{2}\left(c d^2 - b d e + a e^2\right)\sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}$$

$$\sqrt{c + \frac{c d^2 - b d e + a e^2}{(d + e x)^2} + \frac{-2 c d + b e}{d + e x}}\Bigg) - \Bigg(\mathrm{i}\sqrt{2}\, A\, c\, d\, e$$

$$\left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right)\sqrt{1 - \frac{2\left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}\right)(d + e x)}}$$

$$\sqrt{1 - \frac{2\left(c d^2 - b d e + a e^2\right)}{\left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right)(d + e x)}}$$

$$\Bigg(\text{EllipticE}\Big[\mathrm{i}\, \text{ArcSinh}\Big[\frac{\sqrt{2}\sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\Big], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\Big] -$$

$$\text{EllipticF}\Big[\mathrm{i}\, \text{ArcSinh}\Big[\frac{\sqrt{2}\sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\Big],$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+$$

$$\left(\mathbb{i}\,A\,b\,e^2\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-$$

$$\left(3\,\mathbb{i}\,a\,B\,e^2\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(2\,\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+$$

$$\left(\mathbb{i}\,B\,c\,d\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}$$

$$\left.\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Big/$$

$$\left(\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-$$

$$\left(\mathbb{i}\,A\,c\,e\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}$$

$$\left.\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right/$$

$$\left.\left.\left(\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)\right)\right)$$

Problem 2635: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{(A+B\,x)\,(d+e\,x)^{5/2}}{\left(a+b\,x+c\,x^2\right)^{3/2}}\,dx$$

Optimal (type 4, 678 leaves, 7 steps):

$$\left(2\,(d+e\,x)^{3/2}\,\left(2\,a\,c\,(B\,d+A\,e)-b\,(A\,c\,d+a\,B\,e)-\left(b^2\,B\,e-b\,c\,(B\,d+A\,e)+2\,c\,(A\,c\,d-a\,B\,e)\right)\,x\right)\right)\Big/$$

$$\left(c\,\left(b^2-4\,a\,c\right)\,\sqrt{a+b\,x+c\,x^2}\right)+\frac{1}{3\,c^2\,\left(b^2-4\,a\,c\right)}$$

$$2\,e\,\left(4\,b^2\,B\,e-3\,b\,c\,(B\,d+A\,e)+2\,c\,(3\,A\,c\,d-5\,a\,B\,e)\right)\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\,-$$

$$\left(\sqrt{2}\,\left(8\,b^3\,B\,e^2-b^2\,c\,e\,(13\,B\,d+6\,A\,e)-2\,c^2\,\left(3\,A\,c\,d^2-20\,a\,B\,d\,e-9\,a\,A\,e^2\right)+\right.\right.$$

$$\left.b\,c\,\left(3\,B\,c\,d^2+6\,A\,c\,d\,e-29\,a\,B\,e^2\right)\right)\,\sqrt{d+e\,x}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/$$

$$\left(3\,c^3\,\sqrt{b^2-4\,a\,c}\,\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{a+b\,x+c\,x^2}\right)-$$

$$\left(2\,\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\left(4\,b^2\,B\,e-3\,b\,c\,(B\,d+A\,e)+2\,c\,(3\,A\,c\,d-5\,a\,B\,e)\right)\right.$$

$$\sqrt{\frac{c\,(d+e\,x)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],\right.$$

$$\left.\left.-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/\left(3\,c^3\,\sqrt{b^2-4\,a\,c}\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 7589 leaves) :

$$\Bigg(\sqrt{d+e\,x}\,\left(a+b\,x+c\,x^2\right)^2$$

$$\Bigg(\frac{2\,B\,e^2}{3\,c^2}+\Big(2\,\Big(A\,b\,c^2\,d^2-2\,a\,B\,c^2\,d^2+2\,a\,b\,B\,c\,d\,e-4\,a\,A\,c^2\,d\,e-a\,b^2\,B\,e^2+a\,A\,b\,c\,e^2+2\,a^2\,B\,c\,e^2-$$

$$b\,B\,c^2\,d^2\,x+2\,A\,c^3\,d^2\,x+2\,b^2\,B\,c\,d\,e\,x-2\,A\,b\,c^2\,d\,e\,x-4\,a\,B\,c^2\,d\,e\,x-b^3\,B\,e^2\,x+$$

$$A\,b^2\,c\,e^2\,x+3\,a\,b\,B\,c\,e^2\,x-2\,a\,A\,c^2\,e^2\,x\Big)\Big)\Big/\left(c^2\,\left(-b^2+4\,a\,c\right)\,\left(a+b\,x+c\,x^2\right)\right)\Bigg)\Bigg)\Big/$$

$$\left(a+x\,\left(b+c\,x\right)\right)^{3/2}+\frac{1}{3\,c^2\,\left(-b^2+4\,a\,c\right)\,e\,\left(a+x\,\left(b+c\,x\right)\right)^{3/2}}$$

$$2$$

$$\left(a+b\,x+c\,x^2\right)^{3/2}$$

$$\Bigg(\Bigg(\Big(3\,b\,B\,c^2\,d^2-6\,A\,c^3\,d^2-13\,b^2\,B\,c\,d\,e+6\,A\,b\,c^2\,d\,e+$$

$$40\,a\,B\,c^2\,d\,e+8\,b^3\,B\,e^2-6\,A\,b^2\,c\,e^2-29\,a\,b\,B\,c\,e^2+18\,a\,A\,c^2\,e^2\Big)$$

$$\left(d+e\,x\right)^{3/2}\,\left(c+\frac{c\,d^2}{\left(d+e\,x\right)^2}-\frac{b\,d\,e}{\left(d+e\,x\right)^2}+\frac{a\,e^2}{\left(d+e\,x\right)^2}-\frac{2\,c\,d}{d+e\,x}+\frac{b\,e}{d+e\,x}\right)\Bigg)\Big/$$

$$\left(c\,\sqrt{\frac{\left(d+e\,x\right)^2\,\left(c\,\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\,\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)}{e^2}}\right)-\frac{1}{c\,\sqrt{\frac{\left(d+e\,x\right)^2\,\left(c\,\left(-1+\frac{d}{d+e\,x}\right)^2+\frac{e\,\left(b-\frac{b\,d}{d+e\,x}+\frac{a\,e}{d+e\,x}\right)}{d+e\,x}\right)}{e^2}}}$$

$$\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\left(d+e\,x\right)\,\sqrt{c+\frac{c\,d^2}{\left(d+e\,x\right)^2}-\frac{b\,d\,e}{\left(d+e\,x\right)^2}+\frac{a\,e^2}{\left(d+e\,x\right)^2}-\frac{2\,c\,d}{d+e\,x}+\frac{b\,e}{d+e\,x}}$$

$$\Bigg(\Bigg(3\,i\,b\,B\,c^2\,d^2\,\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(2\,\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-$$

$$\left(3\,\mathbb{i}\,A\,c^3\,d^2\,\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}\,\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\right.\right.\right.$$

$$\left.\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\text{EllipticF}\left[\mathbb{i}\right.$$

$$\left.\left.\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/$$

$$\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\right.$$

$$\left.\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-\left(13\,\mathbb{i}\,b^2\,B\,c\,d\,e\right.$$

$$\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}\;\left(\text{EllipticE}\left[\text{i}\,\text{ArcSinh}\left[\right.\right.\right.$$

$$\left.\left.\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\text{EllipticF}\left[\text{i}\right.$$

$$\left.\left.\left.\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/$$

$$\left(2\,\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\right.$$

$$\left.\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+\left(3\,\text{i}\,A\,b\,c^2\,d\,e\right.$$

$$\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}\;\left(\text{EllipticE}\left[\text{i}\,\text{ArcSinh}\left[\right.\right.\right.$$

$$\left.\left.\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\text{EllipticF}\left[\text{i}\right.$$

$$\left.\left.\left.\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/$$

$$\left(\sqrt{2}\,\left(c d^2-b d e+a e^2\right)\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\right.$$

$$\left.\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+\left(10\,\mathrm{i}\,\sqrt{2}\,a B c^2 d e\right.$$

$$\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/\left(\left(c d^2-b d e+a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+\left(2\,\mathrm{i}\,\sqrt{2}\right.$$

$$b^3 B e^2\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\ \sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-$$

$$\left(3\,\mathrm{i}\,A\,b^2\,c\,e^2\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\ \left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\right.\right.\right.$$

$$\left.\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\text{EllipticF}\left[\mathrm{i}\right.$$

$$\left.\left.\left.\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/$$

$$\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\right.$$

$$\left.\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-\left(29\,\mathrm{i}\,a\,b\,B\,c\,e^2\right.$$

$$\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(2\,\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+$$

$$\left(9\,\mathrm{i}\,a\,A\,c^2\,e^2\,\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right) \Bigg/ \left(\sqrt{2}\, \left(c d^2-b d e+a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\, \sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+$$

$$\left(3 i b B c^2 d \sqrt{1-\frac{2 \left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right) (d+e x)}}\right.$$

$$\sqrt{1-\frac{2 \left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right) (d+e x)}}$$

$$\left.\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Bigg/$$

$$\left(\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\, \sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)-$$

$$\left(3 i \sqrt{2}\, A c^3 d \sqrt{1-\frac{2 \left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right) (d+e x)}}\right.$$

$$\sqrt{1-\frac{2 \left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right) (d+e x)}}$$

$$\left.\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right], \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right) \Bigg/$$

$$\left(\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\, \sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)-$$

$$\left(2\,\mathrm{i}\,\sqrt{2}\,b^2\,B\,c\,e\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Bigg/$$

$$\left(\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+$$

$$\left(3\,\mathrm{i}\,A\,b\,c^2\,e\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Bigg/$$

$$\left(\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+$$

$$\left(5\,\mathrm{i}\,\sqrt{2}\,a\,B\,c^2\,e\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\left(d+e\,x\right)}}$$

$$\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\ \frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Bigg/$$

$$\left(\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\ \sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{\left(d+e\,x\right)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)\right)\right)$$

Problem 2636: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^{3/2}}{\left(a+b\,x+c\,x^2\right)^{3/2}}\,dx$$

Optimal (type 4, 530 leaves, 6 steps):

$$\left(2\sqrt{d+e\,x}\,\left(2\,a\,c\,\left(B\,d+A\,e\right)-b\,\left(A\,c\,d+a\,B\,e\right)-\left(b^2\,B\,e-b\,c\,\left(B\,d+A\,e\right)+2\,c\,\left(A\,c\,d-a\,B\,e\right)\right)\,x\right)\right)\Big/\left(c\,\left(b^2-4\,a\,c\right)\,\sqrt{a+b\,x+c\,x^2}\right)+$$

$$\left(\sqrt{2}\,\left(2\,A\,c^2\,d+2\,b^2\,B\,e-c\,\left(b\,B\,d+A\,b\,e+6\,a\,B\,e\right)\right)\,\sqrt{d+e\,x}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/$$

$$\left(c^2\,\sqrt{b^2-4\,a\,c}\,\sqrt{\frac{c\,\left(d+e\,x\right)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{a+b\,x+c\,x^2}\right)+$$

$$\left(2\,\sqrt{2}\,\left(b\,B-2\,A\,c\right)\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\sqrt{\frac{c\,\left(d+e\,x\right)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/$$

$$\left(c^2\,\sqrt{b^2-4\,a\,c}\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 4019 leaves):

$$\left(2\,\sqrt{d+e\,x}\,\left(A\,b\,c\,d-2\,a\,B\,c\,d+a\,b\,B\,e-2\,a\,A\,c\,e-b\,B\,c\,d\,x+2\,A\,c^2\,d\,x+b^2\,B\,e\,x-A\,b\,c\,e\,x-2\,a\,B\,c\,e\,x\right)\right.$$

$$\left.\left(a+b\,x+c\,x^2\right)\right)\Big/\left(c\,\left(-b^2+4\,a\,c\right)\,\left(a+x\,\left(b+c\,x\right)\right)^{3/2}\right)-\frac{1}{c\,\left(-b^2+4\,a\,c\right)\,e\,\left(a+x\,\left(b+c\,x\right)\right)^{3/2}}$$

$$2\left(a+b x+c x^2\right)^{3/2}\left(\left(\left(-b B c d+2 A c^2 d+2 b^2 B e-A b c e-6 a B c e\right)\left(d+e x\right)^{3/2}\right.\right.$$

$$\left.\left.\left(c+\frac{c d^2}{(d+e x)^2}-\frac{b d e}{(d+e x)^2}+\frac{a e^2}{(d+e x)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}\right)\right)\right/$$

$$\left(c\sqrt{\frac{(d+e x)^2\left(c\left(-1+\frac{d}{d+e x}\right)^2+\frac{e\left(b-\frac{b d}{d+e x}+\frac{a e}{d+e x}\right)}{d+e x}\right)}{e^2}}\right)-\frac{1}{c\sqrt{\frac{(d+e x)^2\left(c\left(-1+\frac{d}{d+e x}\right)^2+\frac{e\left(b-\frac{b d}{d+e x}+\frac{a e}{d+e x}\right)}{d+e x}\right)}{e^2}}}$$

$$\left(c d^2-b d e+a e^2\right)\left(d+e x\right)\sqrt{c+\frac{c d^2}{(d+e x)^2}-\frac{b d e}{(d+e x)^2}+\frac{a e^2}{(d+e x)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}}$$

$$\left(-\left(\left(\left(i b B c d\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.\right.\right.\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\right.\right.\right.$$

$$\left.\left.\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\text{EllipticF}\left[\right.$$

$$\left.\left.\left.i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\right/$$

$$\left(2\sqrt{2}\left(c d^2-b d e+a e^2\right)\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\right.$$

$$\left.\left.\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)\right)+$$

$$\left(\mathbb{i}\,A\,c^2\,d\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(\sqrt{2}\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+$$

$$\left(\mathbb{i}\,b^2\,B\,e\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)(d+e\,x)}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Bigg/\left(\sqrt{2}\,\left(c d^2-b d e+a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\,\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)-$$

$$\left(\mathbb{i}\,A\,b\,c\,e\,\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Bigg/\left(2\sqrt{2}\,\left(c d^2-b d e+a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\,\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)-$$

$$\left(3\,\mathbb{i}\,a\,B\,c\,e\,\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/\left(\sqrt{2}\left(c d^2-b d e+a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)-$$

$$\left(\mathrm{i}\,b\,B\,c\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Big/$$

$$\left(\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+$$

$$\left(\mathrm{i}\sqrt{2}\,A\,c^2\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}$$

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\Bigg/$$

$$\left.\left.\left(\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)\right)\right)$$

Problem 2637: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{(A+B\,x)\,\sqrt{d+e\,x}}{\left(a+b\,x+c\,x^2\right)^{3/2}}\,dx$$

Optimal (type 4, 460 leaves, 6 steps) :

$$-\frac{2\left(A b-2 a B-(b B-2 A c) x\right)\sqrt{d+e x}}{\left(b^2-4 a c\right)\sqrt{a+b x+c x^2}}-\left(\sqrt{2}\,(b B-2 A c)\sqrt{d+e x}\sqrt{-\frac{c\left(a+b x+c x^2\right)}{b^2-4 a c}}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4 a c}+2 c x}{\sqrt{b^2-4 a c}}}}{\sqrt{2}}\right],-\frac{2\sqrt{b^2-4 a c}\,e}{2 c d-\left(b+\sqrt{b^2-4 a c}\right)e}\right]\right)\Big/$$

$$\left(c\sqrt{b^2-4 a c}\sqrt{\frac{c\,(d+e x)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right)e}}\sqrt{a+b x+c x^2}\right)+$$

$$\left(2\sqrt{2}\,(b B d-2 A c d+A b e-2 a B e)\sqrt{\frac{c\,(d+e x)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right)e}}\sqrt{-\frac{c\left(a+b x+c x^2\right)}{b^2-4 a c}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4 a c}+2 c x}{\sqrt{b^2-4 a c}}}}{\sqrt{2}}\right],-\frac{2\sqrt{b^2-4 a c}\,e}{2 c d-\left(b+\sqrt{b^2-4 a c}\right)e}\right]\right)\Big/$$

$$\left(c\sqrt{b^2-4 a c}\sqrt{d+e x}\sqrt{a+b x+c x^2}\right)$$

Result (type 4, 5246 leaves):

$$\frac{2\left(-A b+2 a B+b B x-2 A c x\right)\sqrt{d+e x}\left(a+b x+c x^2\right)}{\left(b^2-4 a c\right)\left(a+x\,(b+c x)\right)^{3/2}}+$$

$$\frac{1}{\left(-b^2+4 a c\right)e\left(a+x\,(b+c x)\right)^{3/2}}\,2\left(a+b x+c x^2\right)^{3/2}$$

$$\left(\left((b B-2 A c)\,(d+e x)^{3/2}\left(c+\frac{c d^2}{(d+e x)^2}-\frac{b d e}{(d+e x)^2}+\frac{a e^2}{(d+e x)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}\right)\right)\Big/\right.$$

$$\left(c\sqrt{\frac{(d+e x)^2\left(c\left(-1+\frac{d}{d+e x}\right)^2+\frac{e\left(b-\frac{b d}{d+e x}+\frac{a e}{d+e x}\right)}{d+e x}\right)}{e^2}}\right)+\frac{1}{c\sqrt{\frac{(d+e x)^2\left(c\left(-1+\frac{d}{d+e x}\right)^2+\frac{e\left(b-\frac{b d}{d+e x}+\frac{a e}{d+e x}\right)}{d+e x}\right)}{e^2}}}$$

$$(d+e x)\sqrt{c+\frac{c d^2}{(d+e x)^2}-\frac{b d e}{(d+e x)^2}+\frac{a e^2}{(d+e x)^2}-\frac{2 c d}{d+e x}+\frac{b e}{d+e x}}$$

$$\left(-\left(\left(\mathbb{i}\, b\, B\, c\, d^2\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.\right.\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\right.\right.\right.$$

$$\left.\left.\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\text{EllipticF}\left[\right.$$

$$\left.\left.\left.\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/$$

$$\left(2\sqrt{2}\left(c d^2-b d e+a e^2\right)\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\right.$$

$$\left.\left.\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)\right)+$$

$$\left(\mathbb{i}\, A\, c^2 d^2\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Bigg/\left(\sqrt{2}\left(c d^2-b d e+a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+$$

$$\left(\mathbb{i}\,b^2 B d e\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Bigg/\left(2\sqrt{2}\left(c d^2-b d e+a e^2\right)\right.$$

$$\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\;\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\;\Bigg)-$$

$$\Bigg(\mathrm{i}\, A\, b\, c\, d\, e\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\Bigg(\text{EllipticE}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\Big],\ \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\Big]-$$

$$\text{EllipticF}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\Big],$$

$$\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\Big]\Bigg)\Bigg)\Big/\Bigg(\sqrt{2}\left(c d^2-b d e+a e^2\right)$$

$$\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\;\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\;\Bigg)-$$

$$\Bigg(\mathrm{i}\, a\, b\, B\, e^2\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\Bigg(\text{EllipticE}\Big[\mathrm{i}\,\text{ArcSinh}\Big[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\Big],\ \frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\Big]-$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(2\,\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+$$

$$\left(\mathbb{i}\,a\,A\,c\,e^2\,\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Big/\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-$$

$$\left(\mathbb{i}\,b\,B\,c\,d\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Big/$$

$$\left(\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+$$

$$\left(i\sqrt{2}\,A c^2 d\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Big/$$

$$\left(\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)-$$

$$\left(i\,A b c e\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Big/$$

$$\left(\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+$$

$$\left(i\sqrt{2}\, a B c e\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Bigg/$$

$$\left(\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)\Bigg)\Bigg)$$

Problem 2638: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{A+B x}{\sqrt{d+e x}\left(a+b x+c x^2\right)^{3/2}}\,dx$$

Optimal (type 4, 528 leaves, 6 steps):

$$\left(2\sqrt{d+e\,x}\,\left(a\,B\,\left(2\,c\,d-b\,e\right)-A\,\left(b\,c\,d-b^2\,e+2\,a\,c\,e\right)+c\,\left(b\,B\,d-2\,A\,c\,d+A\,b\,e-2\,a\,B\,e\right)\,x\right)\right)\Big/$$
$$\left(\left(b^2-4\,a\,c\right)\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\sqrt{a+b\,x+c\,x^2}\right)-$$
$$\left(\sqrt{2}\,\left(b\,B\,d-2\,A\,c\,d+A\,b\,e-2\,a\,B\,e\right)\,\sqrt{d+e\,x}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$
$$\left.\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/$$
$$\left(\sqrt{b^2-4\,a\,c}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\sqrt{\frac{c\,\left(d+e\,x\right)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{a+b\,x+c\,x^2}\right)+$$
$$\left(2\,\sqrt{2}\,\left(b\,B-2\,A\,c\right)\,\sqrt{\frac{c\,\left(d+e\,x\right)}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}}\,\sqrt{-\frac{c\,\left(a+b\,x+c\,x^2\right)}{b^2-4\,a\,c}}\right.$$
$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{\sqrt{b^2-4\,a\,c}}}}{\sqrt{2}}\right],-\frac{2\,\sqrt{b^2-4\,a\,c}\,e}{2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right]\right)\Big/$$
$$\left(c\,\sqrt{b^2-4\,a\,c}\,\sqrt{d+e\,x}\,\sqrt{a+b\,x+c\,x^2}\right)$$

Result (type 4, 893 leaves):

$$\left(2\,\sqrt{d+e\,x}\,\left(A\,b\,c\,d-2\,a\,B\,c\,d-A\,b^2\,e+a\,b\,B\,e+2\,a\,A\,c\,e-b\,B\,c\,d\,x+2\,A\,c^2\,d\,x-A\,b\,c\,e\,x+2\,a\,B\,c\,e\,x\right)\right.$$
$$\left.\left(a+b\,x+c\,x^2\right)\right)\Big/\left(\left(-b^2+4\,a\,c\right)\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\left(a+x\,\left(b+c\,x\right)\right)^{3/2}\right)-\left(2\,\left(d+e\,x\right)^{3/2}\right.$$

$$(a+b x+c x^2)^{3/2} \Bigg(-(b B d-2 A c d+A b e-2 a B e)\left(c\left(-1+\frac{d}{d+e x}\right)^2+\frac{e\left(b-\frac{b d}{d+e x}+\frac{a e}{d+e x}\right)}{d+e x}\right)+$$

$$\frac{1}{2\sqrt{2}\sqrt{\frac{c d^2+e(-b d+a e)}{-2 c d+b e+\sqrt{(b^2-4 a c) e^2}}}\sqrt{d+e x}}\, i \sqrt{1-\frac{2\left(c d^2+e(-b d+a e)\right)}{\left(2 c d-b e+\sqrt{(b^2-4 a c) e^2}\right)(d+e x)}}$$

$$\sqrt{1+\frac{2\left(c d^2+e(-b d+a e)\right)}{\left(-2 c d+b e+\sqrt{(b^2-4 a c) e^2}\right)(d+e x)}}$$

$$\Bigg((b B d-2 A c d+A b e-2 a B e)\left(2 c d-b e+\sqrt{(b^2-4 a c) e^2}\right)$$

$$\text{EllipticE}\left[i \,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{\frac{c d^2-b d e+a e^2}{-2 c d+b e+\sqrt{(b^2-4 a c) e^2}}}}{\sqrt{d+e x}}\right], -\frac{-2 c d+b e+\sqrt{(b^2-4 a c) e^2}}{2 c d-b e+\sqrt{(b^2-4 a c) e^2}}\right]-$$

$$\Big(-2 A c d\sqrt{(b^2-4 a c) e^2}+b^2 e (B d-A e)+b\sqrt{(b^2-4 a c) e^2}\,(B d+A e)-$$

$$2 a e\left(2 B c d-2 A c e+B\sqrt{(b^2-4 a c) e^2}\right)\Big)\,\text{EllipticF}\Bigg[$$

$$i\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{\frac{c d^2-b d e+a e^2}{-2 c d+b e+\sqrt{(b^2-4 a c) e^2}}}}{\sqrt{d+e x}}\right], -\frac{-2 c d+b e+\sqrt{(b^2-4 a c) e^2}}{2 c d-b e+\sqrt{(b^2-4 a c) e^2}}\Bigg]\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-b^2+4 a c)\, e\, (c d^2-b d e+a e^2)\,(a+x(b+c x))^{3/2}$$

$$\sqrt{\frac{(d+e x)^2\left(c\left(-1+\frac{d}{d+e x}\right)^2+\frac{e\left(b-\frac{b d}{d+e x}+\frac{a e}{d+e x}\right)}{d+e x}\right)}{e^2}}\Bigg)$$

Problem 2639: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

$$\int \frac{A + B x}{(d + e x)^{3/2} \left(a + b x + c x^2\right)^{3/2}} \, dx$$

Optimal (type 4, 705 leaves, 7 steps):

$$\left(2\left(a B\left(2 c d-b e\right)-A\left(b c d-b^2 e+2 a c e\right)+c\left(b B d-2 A c d+A b e-2 a B e\right) x\right)\right)\Big/\left(\left(b^2-4 a c\right)\left(c d^2-b d e+a e^2\right)\sqrt{d+e x}\,\sqrt{a+b x+c x^2}\right)+$$

$$\left(2 e\left(b^2 e\left(B d-2 A e\right)-2 c\left(A c d^2+4 a B d e-3 a A e^2\right)+b\left(B c d^2+2 A c d e+a B e^2\right)\right)\sqrt{a+b x+c x^2}\right)\Big/\left(\left(b^2-4 a c\right)\left(c d^2-b d e+a e^2\right)^2\sqrt{d+e x}\right)-$$

$$\left(\sqrt{2}\left(b^2 e\left(B d-2 A e\right)-2 c\left(A c d^2+4 a B d e-3 a A e^2\right)+b\left(B c d^2+2 A c d e+a B e^2\right)\right)\sqrt{d+e x}\,\sqrt{-\frac{c\left(a+b x+c x^2\right)}{b^2-4 a c}}\;\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4 a c}+2 c x}{\sqrt{b^2-4 a c}}}}{\sqrt{2}}\right],-\frac{2\sqrt{b^2-4 a c}\;e}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}\right]\right)\Big/$$

$$\left(\sqrt{b^2-4 a c}\left(c d^2-b d e+a e^2\right)^2\sqrt{\frac{c\left(d+e x\right)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}}\,\sqrt{a+b x+c x^2}\right)+$$

$$\left(2\sqrt{2}\left(b B d-2 A c d+A b e-2 a B e\right)\sqrt{\frac{c\left(d+e x\right)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}}\,\sqrt{-\frac{c\left(a+b x+c x^2\right)}{b^2-4 a c}}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{b^2-4 a c}+2 c x}{\sqrt{b^2-4 a c}}}}{\sqrt{2}}\right],-\frac{2\sqrt{b^2-4 a c}\;e}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}\right]\right)\Big/$$

$$\left(\sqrt{b^2-4 a c}\left(c d^2-b d e+a e^2\right)\sqrt{d+e x}\,\sqrt{a+b x+c x^2}\right)$$

Result (type 4, 6669 leaves):

$$\left(\sqrt{d+e x}\left(a+b x+c x^2\right)^2\right.$$

$$\left(-\frac{2 e^2 (-B d + A e)}{(c d^2 - b d e + a e^2)^2 (d + e x)} + \left(2 \left(A b c^2 d^2 - 2 a B c^2 d^2 - 2 A b^2 c d e + 2 a b B c d e + 4 a A c^2 d e + A b^3 e^2 - a b^2 B e^2 - 3 a A b c e^2 + 2 a^2 B c e^2 - b B c^2 d^2 x + 2 A c^3 d^2 x - 2 A b c^2 d e x + 4 a B c^2 d e x + A b^2 c e^2 x - a b B c e^2 x - 2 a A c^2 e^2 x\right)\right) \Big/ \left((-b^2 + 4 a c) (c d^2 - b d e + a e^2)^2 (a + b x + c x^2)\right)\right)\Bigg) \Big/ (a + x (b + c x))^{3/2} -$$

$$\frac{1}{(-b^2 + 4 a c) e (c d^2 - b d e + a e^2)^2 (a + x (b + c x))^{3/2}}$$

$$2$$

$$c$$

$$(a + b x + c x^2)^{3/2}$$

$$\left(\left((-b B c d^2 + 2 A c^2 d^2 - b^2 B d e - 2 A b c d e + 8 a B c d e + 2 A b^2 e^2 - a b B e^2 - 6 a A c e^2)\right.\right.$$

$$(d + e x)^{3/2} \left(c + \frac{c d^2}{(d + e x)^2} - \frac{b d e}{(d + e x)^2} + \frac{a e^2}{(d + e x)^2} - \frac{2 c d}{d + e x} + \frac{b e}{d + e x}\right)\Bigg) \Big/$$

$$\left(c \sqrt{\frac{(d + e x)^2 \left(c \left(-1 + \frac{d}{d+e x}\right)^2 + \frac{e \left(b - \frac{b d}{d+e x} + \frac{a e}{d+e x}\right)}{d+e x}\right)}{e^2}}\right) + \frac{1}{c \sqrt{\frac{(d+e x)^2 \left(c \left(-1+\frac{d}{d+e x}\right)^2 + \frac{e \left(b - \frac{b d}{d+e x} + \frac{a e}{d+e x}\right)}{d+e x}\right)}{e^2}}}$$

$$(c d^2 - b d e + a e^2) (d + e x) \sqrt{c + \frac{c d^2}{(d + e x)^2} - \frac{b d e}{(d + e x)^2} + \frac{a e^2}{(d + e x)^2} - \frac{2 c d}{d + e x} + \frac{b e}{d + e x}}$$

$$\left(\left(\mathrm{i}\, b B c d^2 \left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right) \sqrt{1 - \frac{2 (c d^2 - b d e + a e^2)}{\left(2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}\right) (d + e x)}}\right.\right.$$

$$\sqrt{1 - \frac{2 (c d^2 - b d e + a e^2)}{\left(2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}\right) (d + e x)}}$$

$$\left(\text{EllipticE}\left[\mathrm{i}\, \text{ArcSinh}\left[\frac{\sqrt{2} \sqrt{-\frac{c d^2 - b d e + a e^2}{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}}}{\sqrt{d + e x}}\right], \frac{2 c d - b e - \sqrt{b^2 e^2 - 4 a c e^2}}{2 c d - b e + \sqrt{b^2 e^2 - 4 a c e^2}}\right] -\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(2\,\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)-$$

$$\left(\mathrm{i}\,A\,c^2\,d^2\,\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}$$

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\,\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}}{\sqrt{d+e\,x}}\right],\right.$$

$$\left.\left.\left.\frac{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}{2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}}\right]\right)\right)\Bigg/\left(\sqrt{2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\right.$$

$$\left.\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\,\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)+$$

$$\left(\mathrm{i}\,b^2\,B\,d\,e\,\left(2\,c\,d-b\,e+\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,\sqrt{1-\frac{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{\left(2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}\right)\,(d+e\,x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left(\text{EllipticE}\left[i \operatorname{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[i \operatorname{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/\left(2\sqrt{2}\left(c d^2-b d e+a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+$$

$$\left(i A b c d e\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\left(\text{EllipticE}\left[i \operatorname{ArcSinh}\left[\right.\right.\right.$$

$$\left.\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\text{EllipticF}\left[i\right.$$

$$\left.\left.\left.\operatorname{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Big/$$

$$\left(\sqrt{2}\left(c d^2-b d e+a e^2\right)\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\right.$$

$$\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\Bigg)-\Bigg(2 i \sqrt{2}\, a B c d e$$

$$\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\Bigg(\text{EllipticE}\Big[i\,\text{ArcSinh}\Big[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\Big],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\Big]-$$

$$\text{EllipticF}\Big[i\,\text{ArcSinh}\Big[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\Big],$$

$$\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\Big]\Bigg)\Bigg)\Bigg/\Bigg(\left(c d^2-b d e+a e^2\right)$$

$$\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\Bigg)-$$

$$\Bigg(i A b^2 e^2\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\Bigg(\text{EllipticE}\Big[i\,\text{ArcSinh}\Big[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\Big],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\Big]-$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Bigg/\left(\sqrt{2}\,\left(c d^2-b d e+a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\,\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+$$

$$\left(\mathbb{i}\,a\,b\,B\,e^2\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\,\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Bigg/\left(2\sqrt{2}\,\left(c d^2-b d e+a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\,\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+$$

$$\left(3\,\mathbb{i}\,a\,A\,c\,e^2\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left(\text{EllipticE}\left[i \,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]-\right.$$

$$\text{EllipticF}\left[i \,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\right.$$

$$\left.\left.\left.\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\right)\Bigg/\left(\sqrt{2}\left(c d^2-b d e+a e^2\right)\right.$$

$$\left.\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+$$

$$\left(i\, b B c d\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left.\text{EllipticF}\left[i \,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Bigg/$$

$$\left(\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)-$$

$$\left(i\sqrt{2}\, A c^2 d\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Big/$$

$$\left(\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)+$$

$$\left(\mathrm{i}\,A\,b\,c\,e\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Big/$$

$$\left(\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}\sqrt{c+\frac{c d^2-b d e+a e^2}{(d+e x)^2}+\frac{-2 c d+b e}{d+e x}}\right)-$$

$$\left(\mathrm{i}\sqrt{2}\,a\,B\,c\,e\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}\right.$$

$$\sqrt{1-\frac{2\left(c d^2-b d e+a e^2\right)}{\left(2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}\right)(d+e x)}}$$

$$\left.\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{2}\sqrt{-\frac{c d^2-b d e+a e^2}{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}}}{\sqrt{d+e x}}\right],\frac{2 c d-b e-\sqrt{b^2 e^2-4 a c e^2}}{2 c d-b e+\sqrt{b^2 e^2-4 a c e^2}}\right]\right)\Big/$$

$$\left.\left.\left(\sqrt{-\frac{c\,d^2-b\,d\,e+a\,e^2}{2\,c\,d-b\,e-\sqrt{b^2\,e^2-4\,a\,c\,e^2}}}\;\sqrt{c+\frac{c\,d^2-b\,d\,e+a\,e^2}{(d+e\,x)^2}+\frac{-2\,c\,d+b\,e}{d+e\,x}}\right)\right)\right)$$

Problem 2640: Result more than twice size of optimal antiderivative.

$$\int (A+B\,x)\,(d+e\,x)^m\,\left(a+b\,x+c\,x^2\right)^3\,dx$$

Optimal (type 3, 594 leaves, 2 steps):

$$-\frac{(B\,d-A\,e)\,\left(c\,d^2-b\,d\,e+a\,e^2\right)^3\,(d+e\,x)^{1+m}}{e^8\,(1+m)}-\frac{1}{e^8\,(2+m)}$$
$$\left(c\,d^2-b\,d\,e+a\,e^2\right)^2\,\left(3\,A\,e\,(2\,c\,d-b\,e)-B\,\left(7\,c\,d^2-e\,(4\,b\,d-a\,e)\right)\right)\,(d+e\,x)^{2+m}-$$
$$\frac{1}{e^8\,(3+m)}3\,\left(c\,d^2-b\,d\,e+a\,e^2\right)$$
$$\left(B\,\left(7\,c^2\,d^3-c\,d\,e\,(8\,b\,d-3\,a\,e)+b\,e^2\,(2\,b\,d-a\,e)\right)-A\,e\,\left(5\,c^2\,d^2+b^2\,e^2-c\,e\,(5\,b\,d-a\,e)\right)\right)$$
$$(d+e\,x)^{3+m}-\frac{1}{e^8\,(4+m)}\left(A\,e\,(2\,c\,d-b\,e)\,\left(10\,c^2\,d^2+b^2\,e^2-2\,c\,e\,(5\,b\,d-3\,a\,e)\right)-\right.$$
$$\left.B\,\left(35\,c^3\,d^4-b^2\,e^3\,(4\,b\,d-3\,a\,e)-30\,c^2\,d^2\,e\,(2\,b\,d-a\,e)+3\,c\,e^2\,\left(10\,b^2\,d^2-8\,a\,b\,d\,e+a^2\,e^2\right)\right)\right)$$
$$(d+e\,x)^{4+m}-\frac{1}{e^8\,(5+m)}\left(B\,\left(35\,c^3\,d^3-b^3\,e^3+3\,b\,c\,e^2\,(5\,b\,d-2\,a\,e)-15\,c^2\,d\,e\,(3\,b\,d-a\,e)\right)-\right.$$
$$\left.3\,A\,c\,e\,\left(5\,c^2\,d^2+b^2\,e^2-c\,e\,(5\,b\,d-a\,e)\right)\right)\,(d+e\,x)^{5+m}-\frac{1}{e^8\,(6+m)}$$
$$3\,c\,\left(A\,c\,e\,(2\,c\,d-b\,e)-B\,\left(7\,c^2\,d^2+b^2\,e^2-c\,e\,(6\,b\,d-a\,e)\right)\right)\,(d+e\,x)^{6+m}-$$
$$\frac{c^2\,(7\,B\,c\,d-3\,b\,B\,e-A\,c\,e)\,(d+e\,x)^{7+m}}{e^8\,(7+m)}+\frac{B\,c^3\,(d+e\,x)^{8+m}}{e^8\,(8+m)}$$

Result (type 3, 6116 leaves):

$$(d+e\,x)^m$$
$$\left(-\frac{1}{e^8\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m)}d\,\left(5040\,B\,c^3\,d^7-17\,280\,b\,B\,c^2\,d^6\,e-\right.\right.$$
$$5760\,A\,c^3\,d^6\,e+20\,160\,b^2\,B\,c\,d^5\,e^2+20\,160\,A\,b\,c^2\,d^5\,e^2+20\,160\,a\,B\,c^2\,d^5\,e^2-8064\,b^3\,B\,d^4\,e^3-$$
$$24\,192\,A\,b^2\,c\,d^4\,e^3-48\,384\,a\,b\,B\,c\,d^4\,e^3-24\,192\,a\,A\,c^2\,d^4\,e^3+10\,080\,A\,b^3\,d^3\,e^4+$$
$$30\,240\,a\,b^2\,B\,d^3\,e^4+60\,480\,a\,A\,b\,c\,d^3\,e^4+30\,240\,a^2\,B\,c\,d^3\,e^4-40\,320\,a\,A\,b^2\,d^2\,e^5-$$
$$40\,320\,a^2\,b\,B\,d^2\,e^5-40\,320\,a^2\,A\,c\,d^2\,e^5+60\,480\,a^2\,A\,b\,d\,e^6+20\,160\,a^3\,B\,d\,e^6-$$
$$40\,320\,a^3\,A\,e^7-2160\,b\,B\,c^2\,d^6\,e\,m-720\,A\,c^3\,d^6\,e\,m+5400\,b^2\,B\,c\,d^5\,e^2\,m+5400\,A\,b\,c^2\,d^5\,e^2\,m+$$
$$5400\,a\,B\,c^2\,d^5\,e^2\,m-3504\,b^3\,B\,d^4\,e^3\,m-10\,512\,A\,b^2\,c\,d^4\,e^3\,m-21\,024\,a\,b\,B\,c\,d^4\,e^3\,m-$$
$$10\,512\,a\,A\,c^2\,d^4\,e^3\,m+6396\,A\,b^3\,d^3\,e^4\,m+19\,188\,a\,b^2\,B\,d^3\,e^4\,m+38\,376\,a\,A\,b\,c\,d^3\,e^4\,m+$$
$$19\,188\,a^2\,B\,c\,d^3\,e^4\,m-35\,664\,a\,A\,b^2\,d^2\,e^5\,m-35\,664\,a^2\,b\,B\,d^2\,e^5\,m-35\,664\,a^2\,A\,c\,d^2\,e^5\,m+$$
$$73\,656\,a^2\,A\,b\,d\,e^6\,m+24\,552\,a^3\,B\,d\,e^6\,m-69\,264\,a^3\,A\,e^7\,m+360\,b^2\,B\,c\,d^5\,e^2\,m^2+$$
$$360\,A\,b\,c^2\,d^5\,e^2\,m^2+360\,a\,B\,c^2\,d^5\,e^2\,m^2-504\,b^3\,B\,d^4\,e^3\,m^2-1512\,A\,b^2\,c\,d^4\,e^3\,m^2-$$
$$3024\,a\,b\,B\,c\,d^4\,e^3\,m^2-1512\,a\,A\,c^2\,d^4\,e^3\,m^2+1506\,A\,b^3\,d^3\,e^4\,m^2+4518\,a\,b^2\,B\,d^3\,e^4\,m^2+$$
$$9036\,a\,A\,b\,c\,d^3\,e^4\,m^2+4518\,a^2\,B\,c\,d^3\,e^4\,m^2-12\,420\,a\,A\,b^2\,d^2\,e^5\,m^2-12\,420\,a^2\,b\,B\,d^2\,e^5\,m^2-$$

$12420\,a^2\,A\,c\,d^2\,e^5\,m^2+36462\,a^2\,A\,b\,d\,e^6\,m^2+12154\,a^3\,B\,d\,e^6\,m^2-48860\,a^3\,A\,e^7\,m^2-$
$24\,b^3\,B\,d^4\,e^3\,m^3-72\,A\,b^2\,c\,d^4\,e^3\,m^3-144\,a\,b\,B\,c\,d^4\,e^3\,m^3-72\,a\,A\,c^2\,d^4\,e^3\,m^3+156\,A\,b^3\,d^3\,e^4\,m^3+$
$468\,a\,b^2\,B\,d^3\,e^4\,m^3+936\,a\,A\,b\,c\,d^3\,e^4\,m^3+468\,a^2\,B\,c\,d^3\,e^4\,m^3-2130\,a\,A\,b^2\,d^2\,e^5\,m^3-$
$2130\,a^2\,b\,B\,d^2\,e^5\,m^3-2130\,a^2\,A\,c\,d^2\,e^5\,m^3+9405\,a^2\,A\,b\,d\,e^6\,m^3+3135\,a^3\,B\,d\,e^6\,m^3-$
$18424\,a^3\,A\,e^7\,m^3+6\,A\,b^3\,d^3\,e^4\,m^4+18\,a\,b^2\,B\,d^3\,e^4\,m^4+36\,a\,A\,b\,c\,d^3\,e^4\,m^4+18\,a^2\,B\,c\,d^3\,e^4\,m^4-$
$180\,a\,A\,b^2\,d^2\,e^5\,m^4-180\,a^2\,b\,B\,d^2\,e^5\,m^4-180\,a^2\,A\,c\,d^2\,e^5\,m^4+1335\,a^2\,A\,b\,d\,e^6\,m^4+445\,a^3\,B\,d\,e^6\,m^4-$
$4025\,a^3\,A\,e^7\,m^4-6\,a\,A\,b^2\,d^2\,e^5\,m^5-6\,a^2\,b\,B\,d^2\,e^5\,m^5-6\,a^2\,A\,c\,d^2\,e^5\,m^5+99\,a^2\,A\,b\,d\,e^6\,m^5+$
$33\,a^3\,B\,d\,e^6\,m^5-511\,a^3\,A\,e^7\,m^5+3\,a^2\,A\,b\,d\,e^6\,m^6+a^3\,B\,d\,e^6\,m^6-35\,a^3\,A\,e^7\,m^6-a^3\,A\,e^7\,m^7\Big)+$

$\frac{1}{e^6\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m)\,(e+e\,m)}$

$\Big(40320\,a^3\,A\,e^7+5040\,B\,c^3\,d^7\,m-17280\,b\,B\,c^2\,d^6\,e\,m-5760\,A\,c^3\,d^6\,e\,m+20160\,b^2\,B\,c\,d^5\,e^2\,m+$
$20160\,A\,b\,c^2\,d^5\,e^2\,m+20160\,a\,B\,c^2\,d^5\,e^2\,m-8064\,b^3\,B\,d^4\,e^3\,m-24192\,A\,b^2\,c\,d^4\,e^3\,m-$
$48384\,a\,b\,B\,c\,d^4\,e^3\,m-24192\,a\,A\,c^2\,d^4\,e^3\,m+10080\,A\,b^3\,d^3\,e^4\,m+30240\,a\,b^2\,B\,d^3\,e^4\,m+$
$60480\,a\,A\,b\,c\,d^3\,e^4\,m+30240\,a^2\,B\,c\,d^3\,e^4\,m-40320\,a\,A\,b^2\,d^2\,e^5\,m-40320\,a^2\,b\,B\,d^2\,e^5\,m-$
$40320\,a^2\,A\,c\,d^2\,e^5\,m+60480\,a^2\,A\,b\,d\,e^6\,m+20160\,a^3\,B\,d\,e^6\,m+69264\,a^3\,A\,e^7\,m-$
$2160\,b\,B\,c^2\,d^6\,e\,m^2-720\,A\,c^3\,d^6\,e\,m^2+5400\,b^2\,B\,c\,d^5\,e^2\,m^2+5400\,A\,b\,c^2\,d^5\,e^2\,m^2+$
$5400\,a\,B\,c^2\,d^5\,e^2\,m^2-3504\,b^3\,B\,d^4\,e^3\,m^2-10512\,A\,b^2\,c\,d^4\,e^3\,m^2-21024\,a\,b\,B\,c\,d^4\,e^3\,m^2-$
$10512\,a\,A\,c^2\,d^4\,e^3\,m^2+6396\,A\,b^3\,d^3\,e^4\,m^2+19188\,a\,b^2\,B\,d^3\,e^4\,m^2+38376\,a\,A\,b\,c\,d^3\,e^4\,m^2+$
$19188\,a^2\,B\,c\,d^3\,e^4\,m^2-35664\,a\,A\,b^2\,d^2\,e^5\,m^2-35664\,a^2\,b\,B\,d^2\,e^5\,m^2-35664\,a^2\,A\,c\,d^2\,e^5\,m^2+$
$73656\,a^2\,A\,b\,d\,e^6\,m^2+24552\,a^3\,B\,d\,e^6\,m^2+48860\,a^3\,A\,e^7\,m^2+360\,b^2\,B\,c\,d^5\,e^2\,m^3+$
$360\,A\,b\,c^2\,d^5\,e^2\,m^3+360\,a\,B\,c^2\,d^5\,e^2\,m^3-504\,b^3\,B\,d^4\,e^3\,m^3-1512\,A\,b^2\,c\,d^4\,e^3\,m^3-$
$3024\,a\,b\,B\,c\,d^4\,e^3\,m^3-1512\,a\,A\,c^2\,d^4\,e^3\,m^3+1506\,A\,b^3\,d^3\,e^4\,m^3+4518\,a\,b^2\,B\,d^3\,e^4\,m^3+$
$9036\,a\,A\,b\,c\,d^3\,e^4\,m^3+4518\,a^2\,B\,c\,d^3\,e^4\,m^3-12420\,a\,A\,b^2\,d^2\,e^5\,m^3-12420\,a^2\,b\,B\,d^2\,e^5\,m^3-$
$12420\,a^2\,A\,c\,d^2\,e^5\,m^3+36462\,a^2\,A\,b\,d\,e^6\,m^3+12154\,a^3\,B\,d\,e^6\,m^3+18424\,a^3\,A\,e^7\,m^3-$
$24\,b^3\,B\,d^4\,e^3\,m^4-72\,A\,b^2\,c\,d^4\,e^3\,m^4-144\,a\,b\,B\,c\,d^4\,e^3\,m^4-72\,a\,A\,c^2\,d^4\,e^3\,m^4+156\,A\,b^3\,d^3\,e^4\,m^4+$
$468\,a\,b^2\,B\,d^3\,e^4\,m^4+936\,a\,A\,b\,c\,d^3\,e^4\,m^4+468\,a^2\,B\,c\,d^3\,e^4\,m^4-2130\,a\,A\,b^2\,d^2\,e^5\,m^4-$
$2130\,a^2\,b\,B\,d^2\,e^5\,m^4-2130\,a^2\,A\,c\,d^2\,e^5\,m^4+9405\,a^2\,A\,b\,d\,e^6\,m^4+3135\,a^3\,B\,d\,e^6\,m^4+$
$4025\,a^3\,A\,e^7\,m^4+6\,A\,b^3\,d^3\,e^4\,m^5+18\,a\,b^2\,B\,d^3\,e^4\,m^5+36\,a\,A\,b\,c\,d^3\,e^4\,m^5+18\,a^2\,B\,c\,d^3\,e^4\,m^5-$
$180\,a\,A\,b^2\,d^2\,e^5\,m^5-180\,a^2\,b\,B\,d^2\,e^5\,m^5-180\,a^2\,A\,c\,d^2\,e^5\,m^5+1335\,a^2\,A\,b\,d\,e^6\,m^5+$
$445\,a^3\,B\,d\,e^6\,m^5+511\,a^3\,A\,e^7\,m^5-6\,a\,A\,b^2\,d^2\,e^5\,m^6-6\,a^2\,b\,B\,d^2\,e^5\,m^6-6\,a^2\,A\,c\,d^2\,e^5\,m^6+$
$99\,a^2\,A\,b\,d\,e^6\,m^6+33\,a^3\,B\,d\,e^6\,m^6+35\,a^3\,A\,e^7\,m^6+3\,a^2\,A\,b\,d\,e^6\,m^7+a^3\,B\,d\,e^6\,m^7+a^3\,A\,e^7\,m^7\Big)\,x+$

$\frac{1}{e^5\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m)\,(2\,e+e\,m)}$

$\Big(60480\,a^2\,A\,b\,e^6+20160\,a^3\,B\,e^6-2520\,B\,c^3\,d^6\,m+8640\,b\,B\,c^2\,d^5\,e\,m+2880\,A\,c^3\,d^5\,e\,m-$
$10080\,b^2\,B\,c\,d^4\,e^2\,m-10080\,A\,b\,c^2\,d^4\,e^2\,m-10080\,a\,B\,c^2\,d^4\,e^2\,m+4032\,b^3\,B\,d^3\,e^3\,m+$
$12096\,A\,b^2\,c\,d^3\,e^3\,m+24192\,a\,b\,B\,c\,d^3\,e^3\,m+12096\,a\,A\,c^2\,d^3\,e^3\,m-5040\,A\,b^3\,d^2\,e^4\,m-$
$15120\,a\,b^2\,B\,d^2\,e^4\,m-30240\,a\,A\,b\,c\,d^2\,e^4\,m-15120\,a^2\,B\,c\,d^2\,e^4\,m+20160\,a\,A\,b^2\,d\,e^5\,m+$
$20160\,a^2\,b\,B\,d\,e^5\,m+20160\,a^2\,A\,c\,d\,e^5\,m+73656\,a^2\,A\,b\,e^6\,m+24552\,a^3\,B\,e^6\,m+$
$1080\,b\,B\,c^2\,d^5\,e\,m^2+360\,A\,c^3\,d^5\,e\,m^2-2700\,b^2\,B\,c\,d^4\,e^2\,m^2-2700\,A\,b\,c^2\,d^4\,e^2\,m^2-$
$2700\,a\,B\,c^2\,d^4\,e^2\,m^2+1752\,b^3\,B\,d^3\,e^3\,m^2+5256\,A\,b^2\,c\,d^3\,e^3\,m^2+10512\,a\,b\,B\,c\,d^3\,e^3\,m^2+$
$5256\,a\,A\,c^2\,d^3\,e^3\,m^2-3198\,A\,b^3\,d^2\,e^4\,m^2-9594\,a\,b^2\,B\,d^2\,e^4\,m^2-19188\,a\,A\,b\,c\,d^2\,e^4\,m^2-$
$9594\,a^2\,B\,c\,d^2\,e^4\,m^2+17832\,a\,A\,b^2\,d\,e^5\,m^2+17832\,a^2\,b\,B\,d\,e^5\,m^2+17832\,a^2\,A\,c\,d\,e^5\,m^2+$
$36462\,a^2\,A\,b\,e^6\,m^2+12154\,a^3\,B\,e^6\,m^2-180\,b^2\,B\,c\,d^4\,e^2\,m^3-180\,A\,b\,c^2\,d^4\,e^2\,m^3-$
$180\,a\,B\,c^2\,d^4\,e^2\,m^3+252\,b^3\,B\,d^3\,e^3\,m^3+756\,A\,b^2\,c\,d^3\,e^3\,m^3+1512\,a\,b\,B\,c\,d^3\,e^3\,m^3+$
$756\,a\,A\,c^2\,d^3\,e^3\,m^3-753\,A\,b^3\,d^2\,e^4\,m^3-2259\,a\,b^2\,B\,d^2\,e^4\,m^3-4518\,a\,A\,b\,c\,d^2\,e^4\,m^3-$
$2259\,a^2\,B\,c\,d^2\,e^4\,m^3+6210\,a\,A\,b^2\,d\,e^5\,m^3+6210\,a^2\,b\,B\,d\,e^5\,m^3+6210\,a^2\,A\,c\,d\,e^5\,m^3+$
$9405\,a^2\,A\,b\,e^6\,m^3+3135\,a^3\,B\,e^6\,m^3+12\,b^3\,B\,d^3\,e^3\,m^4+36\,A\,b^2\,c\,d^3\,e^3\,m^4+72\,a\,b\,B\,c\,d^3\,e^3\,m^4+$
$36\,a\,A\,c^2\,d^3\,e^3\,m^4-78\,A\,b^3\,d^2\,e^4\,m^4-234\,a\,b^2\,B\,d^2\,e^4\,m^4-468\,a\,A\,b\,c\,d^2\,e^4\,m^4-$
$234\,a^2\,B\,c\,d^2\,e^4\,m^4+1065\,a\,A\,b^2\,d\,e^5\,m^4+1065\,a^2\,b\,B\,d\,e^5\,m^4+1065\,a^2\,A\,c\,d\,e^5\,m^4+$
$1335\,a^2\,A\,b\,e^6\,m^4+445\,a^3\,B\,e^6\,m^4-3\,A\,b^3\,d^2\,e^4\,m^5-9\,a\,b^2\,B\,d^2\,e^4\,m^5-18\,a\,A\,b\,c\,d^2\,e^4\,m^5-$

$$9\,a^2\,B\,c\,d^2\,e^4\,m^5+90\,a\,A\,b^2\,d\,e^5\,m^5+90\,a^2\,b\,B\,d\,e^5\,m^5+90\,a^2\,A\,c\,d\,e^5\,m^5+99\,a^2\,A\,b\,e^6\,m^5+$$
$$33\,a^3\,B\,e^6\,m^5+3\,a\,A\,b^2\,d\,e^5\,m^6+3\,a^2\,b\,B\,d\,e^5\,m^6+3\,a^2\,A\,c\,d\,e^5\,m^6+3\,a^2\,A\,b\,e^6\,m^6+a^3\,B\,e^6\,m^6\Big)\,x^2+$$

$$\frac{1}{e^4\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m)\,(3\,e+e\,m)}$$
$$\Big(20\,160\,a\,A\,b^2\,e^5+20\,160\,a^2\,b\,B\,e^5+20\,160\,a^2\,A\,c\,e^5+840\,B\,c^3\,d^5\,m-2880\,b\,B\,c^2\,d^4\,e\,m-$$
$$960\,A\,c^3\,d^4\,e\,m+3360\,b^2\,B\,c\,d^3\,e^2\,m+3360\,A\,b\,c^2\,d^3\,e^2\,m+3360\,a\,B\,c^2\,d^3\,e^2\,m-1344\,b^3\,B\,d^2\,e^3\,m-$$
$$4032\,A\,b^2\,c\,d^2\,e^3\,m-8064\,a\,b\,B\,c\,d^2\,e^3\,m-4032\,a\,A\,c^2\,d^2\,e^3\,m+1680\,A\,b^3\,d\,e^4\,m+5040\,a\,b^2\,B\,d\,e^4\,m+$$
$$10\,080\,a\,A\,b\,c\,d\,e^4\,m+5040\,a^2\,B\,c\,d\,e^4\,m+17\,832\,a\,A\,b^2\,e^5\,m+17\,832\,a^2\,b\,B\,e^5\,m+$$
$$17\,832\,a^2\,A\,c\,e^5\,m-360\,b\,B\,c^2\,d^4\,e\,m^2-120\,A\,c^3\,d^4\,e\,m^2+900\,b^2\,B\,c\,d^3\,e^2\,m^2+900\,A\,b\,c^2\,d^3\,e^2\,m^2+$$
$$900\,a\,B\,c^2\,d^3\,e^2\,m^2-584\,b^3\,B\,d^2\,e^3\,m^2-1752\,A\,b^2\,c\,d^2\,e^3\,m^2-3504\,a\,b\,B\,c\,d^2\,e^3\,m^2-$$
$$1752\,a\,A\,c^2\,d^2\,e^3\,m^2+1066\,A\,b^3\,d\,e^4\,m^2+3198\,a\,b^2\,B\,d\,e^4\,m^2+6396\,a\,A\,b\,c\,d\,e^4\,m^2+$$
$$3198\,a^2\,B\,c\,d\,e^4\,m^2+6210\,a\,A\,b^2\,e^5\,m^2+6210\,a^2\,b\,B\,e^5\,m^2+6210\,a^2\,A\,c\,e^5\,m^2+60\,b^2\,B\,c\,d^3\,e^2\,m^3+$$
$$60\,A\,b\,c^2\,d^3\,e^2\,m^3+60\,a\,B\,c^2\,d^3\,e^2\,m^3-84\,b^3\,B\,d^2\,e^3\,m^3-252\,A\,b^2\,c\,d^2\,e^3\,m^3-504\,a\,b\,B\,c\,d^2\,e^3\,m^3-$$
$$252\,a\,A\,c^2\,d^2\,e^3\,m^3+251\,A\,b^3\,d\,e^4\,m^3+753\,a\,b^2\,B\,d\,e^4\,m^3+1506\,a\,A\,b\,c\,d\,e^4\,m^3+753\,a^2\,B\,c\,d\,e^4\,m^3+$$
$$1065\,a\,A\,b^2\,e^5\,m^3+1065\,a^2\,b\,B\,e^5\,m^3+1065\,a^2\,A\,c\,e^5\,m^3-4\,b^3\,B\,d^2\,e^3\,m^4-12\,A\,b^2\,c\,d^2\,e^3\,m^4-$$
$$24\,a\,b\,B\,c\,d^2\,e^3\,m^4-12\,a\,A\,c^2\,d^2\,e^3\,m^4+26\,A\,b^3\,d\,e^4\,m^4+78\,a\,b^2\,B\,d\,e^4\,m^4+156\,a\,A\,b\,c\,d\,e^4\,m^4+$$
$$78\,a^2\,B\,c\,d\,e^4\,m^4+90\,a\,A\,b^2\,e^5\,m^4+90\,a^2\,b\,B\,e^5\,m^4+90\,a^2\,A\,c\,e^5\,m^4+A\,b^3\,d\,e^4\,m^5+3\,a\,b^2\,B\,d\,e^4\,m^5+$$
$$6\,a\,A\,b\,c\,d\,e^4\,m^5+3\,a^2\,B\,c\,d\,e^4\,m^5+3\,a\,A\,b^2\,e^5\,m^5+3\,a^2\,b\,B\,e^5\,m^5+3\,a^2\,A\,c\,e^5\,m^5\Big)\,x^3+$$

$$\frac{1}{e^3\,(5+m)\,(6+m)\,(7+m)\,(8+m)\,(4\,e+e\,m)}\Big(1680\,A\,b^3\,e^4+5040\,a\,b^2\,B\,e^4+10\,080\,a\,A\,b\,c\,e^4+$$
$$5040\,a^2\,B\,c\,e^4-210\,B\,c^3\,d^4\,m+720\,b\,B\,c^2\,d^3\,e\,m+240\,A\,c^3\,d^3\,e\,m-840\,b^2\,B\,c\,d^2\,e^2\,m-$$
$$840\,A\,b\,c^2\,d^2\,e^2\,m-840\,a\,B\,c^2\,d^2\,e^2\,m+336\,b^3\,B\,d\,e^3\,m+1008\,A\,b^2\,c\,d\,e^3\,m+2016\,a\,b\,B\,c\,d\,e^3\,m+$$
$$1008\,a\,A\,c^2\,d\,e^3\,m+1066\,A\,b^3\,e^4\,m+3198\,a\,b^2\,B\,e^4\,m+6396\,a\,A\,b\,c\,e^4\,m+3198\,a^2\,B\,c\,e^4\,m+$$
$$90\,b\,B\,c^2\,d^3\,e\,m^2+30\,A\,c^3\,d^3\,e\,m^2-225\,b^2\,B\,c\,d^2\,e^2\,m^2-225\,A\,b\,c^2\,d^2\,e^2\,m^2-225\,a\,B\,c^2\,d^2\,e^2\,m^2+$$
$$146\,b^3\,B\,d\,e^3\,m^2+438\,A\,b^2\,c\,d\,e^3\,m^2+876\,a\,b\,B\,c\,d\,e^3\,m^2+438\,a\,A\,c^2\,d\,e^3\,m^2+251\,A\,b^3\,e^4\,m^2+$$
$$753\,a\,b^2\,B\,e^4\,m^2+1506\,a\,A\,b\,c\,e^4\,m^2+753\,a^2\,B\,c\,e^4\,m^2-15\,b^2\,B\,c\,d^2\,e^2\,m^3-15\,A\,b\,c^2\,d^2\,e^2\,m^3-$$
$$15\,a\,B\,c^2\,d^2\,e^2\,m^3+21\,b^3\,B\,d\,e^3\,m^3+63\,A\,b^2\,c\,d\,e^3\,m^3+126\,a\,b\,B\,c\,d\,e^3\,m^3+63\,a\,A\,c^2\,d\,e^3\,m^3+$$
$$26\,A\,b^3\,e^4\,m^3+78\,a\,b^2\,B\,e^4\,m^3+156\,a\,A\,b\,c\,e^4\,m^3+78\,a^2\,B\,c\,e^4\,m^3+b^3\,B\,d\,e^3\,m^4+3\,A\,b^2\,c\,d\,e^3\,m^4+$$
$$6\,a\,b\,B\,c\,d\,e^3\,m^4+3\,a\,A\,c^2\,d\,e^3\,m^4+A\,b^3\,e^4\,m^4+3\,a\,b^2\,B\,e^4\,m^4+6\,a\,A\,b\,c\,e^4\,m^4+3\,a^2\,B\,c\,e^4\,m^4\Big)\,x^4+$$

$$\frac{1}{e^2\,(6+m)\,(7+m)\,(8+m)\,(5\,e+e\,m)}\Big(336\,b^3\,B\,e^3+1008\,A\,b^2\,c\,e^3+2016\,a\,b\,B\,c\,e^3+$$
$$1008\,a\,A\,c^2\,e^3+42\,B\,c^3\,d^3\,m-144\,b\,B\,c^2\,d^2\,e\,m-48\,A\,c^3\,d^2\,e\,m+168\,b^2\,B\,c\,d\,e^2\,m+168\,A\,b\,c^2\,d\,e^2\,m+$$
$$168\,a\,B\,c^2\,d\,e^2\,m+146\,b^3\,B\,e^3\,m+438\,A\,b^2\,c\,e^3\,m+876\,a\,b\,B\,c\,e^3\,m+438\,a\,A\,c^2\,e^3\,m-$$
$$18\,b\,B\,c^2\,d^2\,e\,m^2-6\,A\,c^3\,d^2\,e\,m^2+45\,b^2\,B\,c\,d\,e^2\,m^2+45\,A\,b\,c^2\,d\,e^2\,m^2+45\,a\,B\,c^2\,d\,e^2\,m^2+$$
$$21\,b^3\,B\,e^3\,m^2+63\,A\,b^2\,c\,e^3\,m^2+126\,a\,b\,B\,c\,e^3\,m^2+63\,a\,A\,c^2\,e^3\,m^2+3\,b^2\,B\,c\,d\,e^2\,m^3+$$
$$3\,A\,b\,c^2\,d\,e^2\,m^3+3\,a\,B\,c^2\,d\,e^2\,m^3+b^3\,B\,e^3\,m^3+3\,A\,b^2\,c\,e^3\,m^3+6\,a\,b\,B\,c\,e^3\,m^3+3\,a\,A\,c^2\,e^3\,m^3\Big)\,x^5+$$

$$\Big(\Big(168\,b^2\,B\,c\,e^2+168\,A\,b\,c^2\,e^2+168\,a\,B\,c^2\,e^2-7\,B\,c^3\,d^2\,m+24\,b\,B\,c^2\,d\,e\,m+8\,A\,c^3\,d\,e\,m+$$
$$45\,b^2\,B\,c\,e^2\,m+45\,A\,b\,c^2\,e^2\,m+45\,a\,B\,c^2\,e^2\,m+3\,b\,B\,c^2\,d\,e\,m^2+A\,c^3\,d\,e\,m^2+$$
$$3\,b^2\,B\,c\,e^2\,m^2+3\,A\,b\,c^2\,e^2\,m^2+3\,a\,B\,c^2\,e^2\,m^2\Big)\,x^6\Big)\Big/\Big(e\,(7+m)\,(8+m)\,(6\,e+e\,m)\Big)+$$

$$\frac{\left(24\,b\,B\,c^2\,e+8\,A\,c^3\,e+B\,c^3\,d\,m+3\,b\,B\,c^2\,e\,m+A\,c^3\,e\,m\right)\,x^7}{(8+m)\,(7\,e+e\,m)}+\frac{B\,c^3\,e\,x^8}{8\,e+e\,m}\Big)$$

Problem 2641: Result more than twice size of optimal antiderivative.

$$\int (A+B\,x)\,(d+e\,x)^m\,\left(a+b\,x+c\,x^2\right)^2\,dx$$

Optimal (type 3, 333 leaves, 2 steps):

$$-\frac{(B d-A e)\left(c d^2-b d e+a e^2\right)^2 (d+e x)^{1+m}}{e^6 (1+m)}-\frac{1}{e^6 (2+m)}\left(c d^2-b d e+a e^2\right)\left(2 A e (2 c d-b e)-B\left(5 c d^2-e (3 b d-a e)\right)\right)(d+e x)^{2+m}-\frac{1}{e^6 (3+m)}\left(B\left(10 c^2 d^3+b e^2 (3 b d-2 a e)-6 c d e (2 b d-a e)\right)-A e\left(6 c^2 d^2+b^2 e^2-2 c e (3 b d-a e)\right)\right)(d+e x)^{3+m}-\frac{1}{e^6 (4+m)}\left(2 A c e (2 c d-b e)-B\left(10 c^2 d^2+b^2 e^2-2 c e (4 b d-a e)\right)\right)(d+e x)^{4+m}-\frac{c (5 B c d-2 b B e-A c e)(d+e x)^{5+m}}{e^6 (5+m)}+\frac{B c^2 (d+e x)^{6+m}}{e^6 (6+m)}$$

Result (type 3, 722 leaves) :

$$\frac{1}{e^6 (1+m)(2+m)(3+m)(4+m)(5+m)(6+m)}(d+e x)^{1+m}\Big(A e (6+m)\Big(c^2\left(24 d^4-24 d^3 e (1+m) x+12 d^2 e^2\left(2+3 m+m^2\right) x^2-4 d e^3\left(6+11 m+6 m^2+m^3\right) x^3+e^4\left(24+50 m+35 m^2+10 m^3+m^4\right) x^4\right)+e^2\left(20+9 m+m^2\right)\left(a^2 e^2\left(6+5 m+m^2\right)+2 a b e (3+m)(-d+e (1+m) x)+b^2\left(2 d^2-2 d e (1+m) x+e^2\left(2+3 m+m^2\right) x^2\right)\right)+2 c e (5+m)\left(a e (4+m)\left(2 d^2-2 d e (1+m) x+e^2\left(2+3 m+m^2\right) x^2\right)+b\left(-6 d^3+6 d^2 e (1+m) x-3 d e^2\left(2+3 m+m^2\right) x^2+e^3\left(6+11 m+6 m^2+m^3\right) x^3\right)\right)\Big)+B\Big(-c^2\left(120 d^5-120 d^4 e (1+m) x+60 d^3 e^2\left(2+3 m+m^2\right) x^2-20 d^2 e^3\left(6+11 m+6 m^2+m^3\right) x^3+5 d e^4\left(24+50 m+35 m^2+10 m^3+m^4\right) x^4-e^5\left(120+274 m+225 m^2+85 m^3+15 m^4+m^5\right) x^5\right)+e^2\left(30+11 m+m^2\right)\left(a^2 e^2\left(12+7 m+m^2\right)(-d+e (1+m) x)+2 a b e (4+m)\left(2 d^2-2 d e (1+m) x+e^2\left(2+3 m+m^2\right) x^2\right)+b^2\left(-6 d^3+6 d^2 e (1+m) x-3 d e^2\left(2+3 m+m^2\right) x^2+e^3\left(6+11 m+6 m^2+m^3\right) x^3\right)\right)+2 c e (6+m)\Big(a e (5+m)\left(-6 d^3+6 d^2 e (1+m) x-3 d e^2\left(2+3 m+m^2\right) x^2+e^3\left(6+11 m+6 m^2+m^3\right) x^3\right)+b\left(24 d^4-24 d^3 e (1+m) x+12 d^2 e^2\left(2+3 m+m^2\right) x^2-4 d e^3\left(6+11 m+6 m^2+m^3\right) x^3+e^4\left(24+50 m+35 m^2+10 m^3+m^4\right) x^4\right)\Big)\Big)\Big)$$

Problem 2644: Unable to integrate problem.

$$\int \frac{(A+B x)(d+e x)^m}{\left(a+b x+c x^2\right)^2}\,dx$$

Optimal (type 5, 538 leaves, 5 steps) :

$$\left((d+e x)^{1+m}\left(a B (2 c d-b e)-A\left(b c d-b^2 e+2 a c e\right)+c (b B d-2 A c d+A b e-2 a B e) x\right)\right)\Big/\left(\left(b^2-4 a c\right)\left(c d^2-b d e+a e^2\right)\left(a+b x+c x^2\right)\right)+\left(c\left(e (b B d-2 A c d+A b e-2 a B e) m-\frac{1}{\sqrt{b^2-4 a c}}\left(2 b\left(B c d^2+2 A c d e+a B e^2\right)-b^2 e (B d (2-m)+A e m)-4 c\left(A\left(c d^2+a e^2 (1-m)\right)+a B d e m\right)\right)\right)(d+e x)^{1+m} \text{Hypergeometric2F1}\left[1,1+m,2+m,\frac{2 c (d+e x)}{2 c d-\left(b-\sqrt{b^2-4 a c}\right) e}\right]\right)\Big/\left(\left(b^2-4 a c\right)\left(2 c d-\left(b-\sqrt{b^2-4 a c}\right) e\right)\left(c d^2-b d e+a e^2\right)(1+m)\right)+\left(c\left(e (b B d-2 A c d+A b e-2 a B e) m+\frac{1}{\sqrt{b^2-4 a c}}\left(2 b\left(B c d^2+2 A c d e+a B e^2\right)-b^2 e (B d (2-m)+A e m)-4 c\left(A\left(c d^2+a e^2 (1-m)\right)+a B d e m\right)\right)\right)(d+e x)^{1+m} \text{Hypergeometric2F1}\left[1,1+m,2+m,\frac{2 c (d+e x)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}\right]\right)\Big/\left(\left(b^2-4 a c\right)\left(2 c d-\left(b+\sqrt{b^2-4 a c}\right) e\right)\left(c d^2-b d e+a e^2\right)(1+m)\right)$$

Result (type 8, 27 leaves):

$$\int \frac{(A+B x)(d+e x)^m}{\left(a+b x+c x^2\right)^2}\,dx$$

Problem 2645: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B x)(d+e x)^{1+m}}{a+b x+c x^2}\,dx$$

Optimal (type 5, 212 leaves, 4 steps):

$$-\left(\left(\left(B-\frac{b B-2 A c}{\sqrt{b^2-4 a c}}\right)(d+e x)^{2+m} \text{Hypergeometric2F1}\left[1,2+m,3+m,\frac{2 c (d+e x)}{2 c d-\left(b-\sqrt{b^2-4 a c}\right) e}\right]\right)\Big/\left(\left(2 c d-\left(b-\sqrt{b^2-4 a c}\right) e\right)(2+m)\right)\right)-\left(\left(B+\frac{b B-2 A c}{\sqrt{b^2-4 a c}}\right)(d+e x)^{2+m} \text{Hypergeometric2F1}\left[1,2+m,3+m,\frac{2 c (d+e x)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}\right]\right)\Big/\left(\left(2 c d-\left(b+\sqrt{b^2-4 a c}\right) e\right)(2+m)\right)$$

Result (type 5, 1358 leaves) :

$$-\frac{1}{4\,c^2\,\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\;m\,\left(1+m\right)}$$

$$\left(d+e\,x\right)^m\,\Bigg(-2^{1-m}\,A\,c\,e\,\left(1+m\right)\,\left(\frac{c\,\left(d+e\,x\right)}{b\,e-\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right)^{-m}\,\left(\frac{c\,\left(d+e\,x\right)}{b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right)^{-m}$$

$$\Bigg(\left(2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\,\left(\frac{c\,\left(d+e\,x\right)}{b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right)^m$$

$$\text{Hypergeometric2F1}\left[-m,\,-m,\,1-m,\,\frac{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}-2\,c\,e\,x}\right]+$$

$$\left(-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\,\left(\frac{c\,\left(d+e\,x\right)}{b\,e-\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right)^m$$

$$\text{Hypergeometric2F1}\left[-m,\,-m,\,1-m,\,\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right]\Bigg)+$$

$$B\,\Bigg(2\,c\,\left(2\,c\,d-b\,e-\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\,m\,\left(d+e\,x\right)-2\,c\,\left(2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\,m\,\left(d+e\,x\right)-$$

$$2^{-m}\,\left(2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)^2\,\left(\frac{c\,\left(d+e\,x\right)}{b\,e-\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right)^{-m}$$

$$\text{Hypergeometric2F1}\left[-m,\,-m,\,1-m,\,\frac{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}-2\,c\,e\,x}\right]-$$

$$2^{-m}\,\left(2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)^2\,m\,\left(\frac{c\,\left(d+e\,x\right)}{b\,e-\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right)^{-m}$$

$$\text{Hypergeometric2F1}\left[-m,\,-m,\,1-m,\,\frac{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}-2\,c\,e\,x}\right]+$$

$$2^{-m}\,\left(-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)^2\,\left(\frac{c\,\left(d+e\,x\right)}{b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right)^{-m}$$

$$\text{Hypergeometric2F1}\left[-m,\,-m,\,1-m,\,\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right]+$$

$$2^{-m}\,\left(-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)^2\,m\,\left(\frac{c\,\left(d+e\,x\right)}{b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right)^{-m}$$

$$\text{Hypergeometric2F1}\left[-m,\,-m,\,1-m,\,\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right]+$$

$$2^{1-m}\,c\,d\,\left(1+m\right)\,\left(\frac{c\,\left(d+e\,x\right)}{b\,e-\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right)^{-m}\,\left(\frac{c\,\left(d+e\,x\right)}{b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right)^{-m}$$

$$\left(\left(2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\,\left(\frac{c\,\left(d+e\,x\right)}{b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right)^{m}\right.$$

$$\text{Hypergeometric2F1}\left[-m,\,-m,\,1-m,\,\frac{2\,c\,d-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{-b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}-2\,c\,e\,x}\right]+$$

$$\left(-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}\right)\,\left(\frac{c\,\left(d+e\,x\right)}{b\,e-\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right)^{m}$$

$$\left.\left.\left.\text{Hypergeometric2F1}\left[-m,\,-m,\,1-m,\,\frac{-2\,c\,d+b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}}{b\,e+\sqrt{\left(b^2-4\,a\,c\right)\,e^2}+2\,c\,e\,x}\right]\right)\right)\right)$$

Problem 2646: Result more than twice size of optimal antiderivative.

$$\int (A+B\,x)\,\left(d+e\,x\right)^{-3-2\,p}\,\left(a+b\,x+c\,x^2\right)^p\,dx$$

Optimal (type 5, 349 leaves, 2 steps):

$$\frac{\left(B\,d-A\,e\right)\,\left(d+e\,x\right)^{-2\,(1+p)}\,\left(a+b\,x+c\,x^2\right)^{1+p}}{2\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\left(1+p\right)}-\left(\left(b\,B\,d-2\,A\,c\,d+A\,b\,e-2\,a\,B\,e\right)\right.$$

$$\left(b-\sqrt{b^2-4\,a\,c}+2\,c\,x\right)\,\left(\frac{\left(2\,c\,d-\left(b-\sqrt{b^2-4\,a\,c}\right)\,e\right)\,\left(b+\sqrt{b^2-4\,a\,c}+2\,c\,x\right)}{\left(2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e\right)\,\left(b-\sqrt{b^2-4\,a\,c}+2\,c\,x\right)}\right)^{-p}$$

$$\left(d+e\,x\right)^{-1-2\,p}\,\left(a+b\,x+c\,x^2\right)^p\,\text{Hypergeometric2F1}\left[-1-2\,p,\,-p,\right.$$

$$\left.\left.-2\,p,\,-\frac{4\,c\,\sqrt{b^2-4\,a\,c}\,\left(d+e\,x\right)}{\left(2\,c\,d-\left(b+\sqrt{b^2-4\,a\,c}\right)\,e\right)\,\left(b-\sqrt{b^2-4\,a\,c}+2\,c\,x\right)}\right]\right)\Big/$$

$$\left(2\,\left(2\,c\,d-\left(b-\sqrt{b^2-4\,a\,c}\right)\,e\right)\,\left(c\,d^2-b\,d\,e+a\,e^2\right)\,\left(1+2\,p\right)\right)$$

Result (type 5, 1158 leaves):

$$\frac{1}{e^2}\,2^{-2-3\,p}\,\left(\frac{b-\sqrt{b^2-4\,a\,c}}{2\,c}+x\right)^{-p}\,\left(\frac{e\,\left(-b+\sqrt{b^2-4\,a\,c}-2\,c\,x\right)}{2\,c\,d+\left(-b+\sqrt{b^2-4\,a\,c}\right)\,e}\right)^{-p}$$

$$\left(\frac{b-\sqrt{b^2-4\,a\,c}+2\,c\,x}{c}\right)^{p}\,\left(\frac{e\,\left(b+\sqrt{b^2-4\,a\,c}+2\,c\,x\right)}{-2\,c\,d+\left(b+\sqrt{b^2-4\,a\,c}\right)\,e}\right)^{-p}$$

$$(d+e x)^{-2(1+p)}\left(a+x(b+c x)\right)^p\left(1-\frac{2 c (d+e x)}{2 c d+\left(-b+\sqrt{b^2-4 a c}\right) e}\right)^{1+p}$$

$$\Bigg(-\Bigg(\Bigg(B d\left(1-\frac{2 c (d+e x)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}\right)^p \text{Gamma}\left[-\frac{1}{2}-p\right]\Bigg(\Bigg(2 c d+\left(-b+\sqrt{b^2-4 a c}\right) e\Bigg)$$

$$\left(4 c d (1+p)+\left(-b+\sqrt{b^2-4 a c}\right) e (1+2 p)+2 c e x\right) \text{Gamma}[1-2 p]$$

$$\text{Gamma}[-p] \text{ Hypergeometric2F1}\Big[1,-p,-2 p,\left(4 c \sqrt{b^2-4 a c}\,(d+e x)\right)\Big/$$

$$\left(\left(2 c d+\left(-b+\sqrt{b^2-4 a c}\right) e\right)\left(b+\sqrt{b^2-4 a c}+2 c x\right)\right)\Big]+$$

$$\left(4 c e\left(-b^2+4 a c+b\sqrt{b^2-4 a c}+2 c\sqrt{b^2-4 a c}\, x\right)(d+e x) \text{Gamma}[1-p]\right.$$

$$\text{Gamma}[-2 p] \text{ Hypergeometric2F1}\Big[2,1-p,1-2 p,$$

$$\left(4 c \sqrt{b^2-4 a c}\,(d+e x)\right)\Big/\left(\left(2 c d+\left(-b+\sqrt{b^2-4 a c}\right) e\right)\right.$$

$$\left.\left(b+\sqrt{b^2-4 a c}+2 c x\right)\right)\Big]\Big)\Big/\left(b+\sqrt{b^2-4 a c}+2 c x\right)\Bigg)\Bigg)\Big/$$

$$\left(2\left(2 c d+\left(-b+\sqrt{b^2-4 a c}\right) e\right)^2 (1+p)\sqrt{\pi}\, \text{Gamma}[1-2 p] \text{ Gamma}[-2 p]\right)\Bigg)+$$

$$\Bigg(A e\left(1-\frac{2 c (d+e x)}{2 c d-\left(b+\sqrt{b^2-4 a c}\right) e}\right)^p \text{Gamma}\left[-\frac{1}{2}-p\right]$$

$$\Bigg(\left(2 c d+\left(-b+\sqrt{b^2-4 a c}\right) e\right)\left(4 c d (1+p)+\left(-b+\sqrt{b^2-4 a c}\right) e (1+2 p)+2 c e x\right)$$

$$\text{Gamma}[1-2 p] \text{ Gamma}[-p] \text{ Hypergeometric2F1}\Big[1,-p,-2 p,$$

$$\frac{4 c \sqrt{b^2-4 a c}\,(d+e x)}{\left(2 c d+\left(-b+\sqrt{b^2-4 a c}\right) e\right)\left(b+\sqrt{b^2-4 a c}+2 c x\right)}\Big]+$$

$$\left(4 c e\left(-b^2+4 a c+b\sqrt{b^2-4 a c}+2 c\sqrt{b^2-4 a c}\, x\right)(d+e x) \text{Gamma}[1-p] \text{ Gamma}[-2 p]\right.$$

$$\text{Hypergeometric2F1}\Big[2,1-p,1-2 p,\left(4 c \sqrt{b^2-4 a c}\,(d+e x)\right)\Big/\Bigg(\Bigg(2 c d+\Bigg(-b+$$

$$\left.\sqrt{b^2-4 a c}\right) e\Bigg)\left(b+\sqrt{b^2-4 a c}+2 c x\right)\Bigg)\Big]\Big)\Big/\left(b+\sqrt{b^2-4 a c}+2 c x\right)\Bigg)\Bigg)\Big/$$

$$\left(2\left(2 c d+\left(-b+\sqrt{b^2-4 a c}\right) e\right)^2 (1+p)\sqrt{\pi}\, \text{Gamma}[1-2 p] \text{ Gamma}[-2 p]\right)-$$

$$\frac{1}{1+2 p} 4^{1+p}$$

$$B$$

$$(d+e x)$$

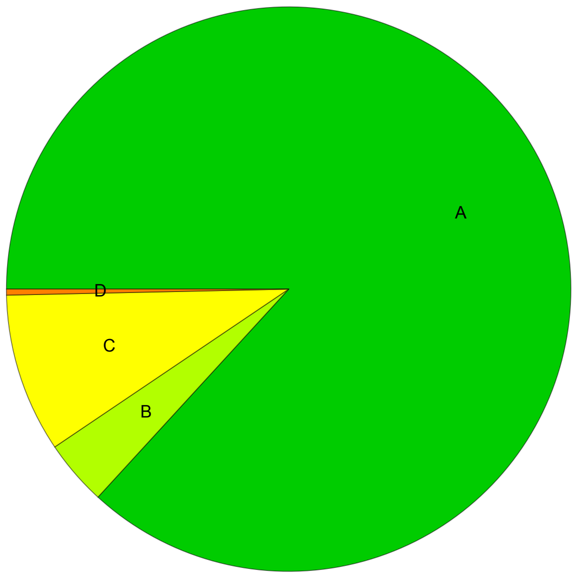
$$\left(1-\frac{2\,c\,\left(d+e\,x\right)}{2\,c\,d+\left(-b+\sqrt{b^2-4\,a\,c}\right)\,e}\right)^p$$

Hypergeometric2F1$\Big[-1-2\,p,\ -p,\ -2\,p,$

$$-\frac{4\,c\,\sqrt{b^2-4\,a\,c}\,\left(d+e\,x\right)}{\left(-2\,c\,d+\left(b+\sqrt{b^2-4\,a\,c}\right)\,e\right)\,\left(-b+\sqrt{b^2-4\,a\,c}-2\,c\,x\right)}\Big]\Bigg)$$

Summary of Integration Test Results

2646 integration problems



A - 2297 optimal antiderivatives

B - 99 more than twice size of optimal antiderivatives

C - 241 unnecessarily complex antiderivatives

D - 9 unable to integrate problems

E - 0 integration timeouts